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ABSTRACT

These curriculum guides for technology education programs were developed by the state of Mississippi to standardize vocational education course titles and core contents. The objectives contained in these documents are common to all programs in the state. The curriculum guides for Technology Education I, II, and II each contain the following units: six units in the manufacturing technology cluster; six units in the construction technology cluster; seven units in the communication technology cluster; and five units in the transportation (energy and power) cluster. Each unit consists of these components: objectives, with core/essential objectives indicated; suggested instructional practices; list of suggested resources; list of evaluation and suggested minimum performance standards, with core/essential objectives indicated; and performance record, with core/essential objectives indicated. (KC)

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Standardized Curriculum For

Technology Education I-III

Mississippi Department of Education
Bureau of
Vocational, Technical
and Adult Education

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STANDARDIZED CURRICULA

FOR

TECHNOLOGY EDUCATION I PROGRAMS

MISSISSIPPI DEPARTMENT OF EDUCATION

OFFICE OF VOCATIONAL, TECHNICAL,

AND ADULT EDUCATION

August 1989

Direct inquiries to:

Lynn Basham, State Supervisor
Technology Education Programs
Office of Vocational, Technical, and Adult Education
Box 771
Jackson, Mississippi 39205
Phone: (601) 359-3941

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1989

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TECHNOLOGY EDUCATION I

Manufacturing Technology Cluster

Unit 1: Introduction to Manufacturing Technology
Unit 2: Types of Manufacturing Systems
Unit 3: Manufacturing Materials and Evaluation
Unit 4: Manufacturing and Marketing
Unit 5: Careers in Manufacturing
Unit 6: Manufacturing Processes

Construction Technology Cluster

Unit 1: Introduction to Construction
Unit 2: Contracting
Unit 3: Design and Planning
Unit 4: Building the Structure
Unit 5: Finishing the Structure
Unit 6: Occupational and Career Opportunity

Communication Technology Cluster

Unit 1: Introduction to Communication Technology
Unit 2: Sketching and Measurement
Unit 3: Orthographic and Isometric Drawings
Unit 4: Computer Utilization and CAD
Unit 5: Electronic Communication
Unit 6: Graphic Arts
Unit 7: Photography

Transportation (Energy and Power) Cluster

Unit 1: Introduction to Energy and Power Systems
Unit 2: Energy and Power Systems
Unit 3: Engines
Unit 4: Impacts of Energy/Power/Transportation
Unit 5: Career and Leadership Opportunities

Course: Technology Education I: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 1: Introduction to Manufacturing Technology

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Define manufacturing technology and related terms.
2. Identify statements concerning the historical perspective of manufacturing.
*3. Differentiate between production, manufacturing, and construction.
4. Identify the components of a manufacturing system according to the universal system model.
*5. Identify the areas of a manufacturing organization and the correct function of each area.
*6. Identify job titles and tasks in the different divisions of manufacturing.
*7. Discuss general industrial and laboratory safety rules and explain the purpose of each rule.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Group Exercise "A Manufacturing Company, Its Structure, and Its Components"
2. Industrial Park Operations: Establish an industrial park which includes several companies, an airport, waterways, utilities, roads, railroads, etc. Include a city layout and plans for future expansions. Use materials such as boxes and tape to construct the model.
3. Instead of No. 2 above, set up a company model showing the typical divisions: office, plant, parts and maintenance, etc.
4. Locate manufacturing on a time line.
5. "Label" each student with a component of manufacturing. Then, send each student to the correct area set aside for part of the universal system model and allow them to explain why they are there. Use signs, hats, or something similar for labels.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987.

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

AIASA Competitive Events Guide

Visual Aids

Mississippi R & D Center, Jackson

Evaluation and Suggested Minimum Performance Standards:

Note: Each objective will be performed at 70% accuracy.

*Objective 1: The student will correctly define designated terms related to manufacturing.
Objective 2: The student will complete statements concerning the historical perspective of manufacturing.
*Objective 3: The student will differentiate between the terms production, manufacturing, and construction.
Objective 4: The student will identify the four components of manufacturing as they relate to the universal system model.
*Objective 5: The student will match the areas of manufacturing to their correct functions.
*Objective 6: The student will identify job titles and job tasks found in manufacturing divisions.
*Objective 7: The student will score 70% on a general safety rules test.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Defined manufacturing technology and related terms.
_____2. Identified statements concerning the historical perspective of manufacturing.
____*3. Differentiated between production, manufacturing, and construction.
_____4. Identified the components of a manufacturing system according to the universal system model.
____*5. Identified the areas of a manufacturing organization and the correct function of each area.

___*6. Identified job titles and tasks in different divisions of manufacturing.

___*7. Discussed general industrial and laboratory safety rules and explained the purpose of each rule.

* Indicates core/essential objectives

Course: Technology Education I: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 2: Types of Manufacturing Systems

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Match the terms related to manufacturing systems with the correct definitions.
*2. Distinguish between the types of manufacturing systems.
*3. Determine the characteristics of free enterprise.
4. List the main components of a manufacturing enterprise.
5. State the functions of management of a manufacturing enterprise.
*6. Identify the forms of ownership of manufacturing enterprises.
7. Complete statements concerning the importance of the different forms of ownership in the United States.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Set up examples of the three types of company ownership using students to represent each. Consider using resource persons who represent each type of ownership.
2. Draw an organizational chart for a company.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education." 1987.

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

AIASA Competitive Events Guide

Evaluation and Suggested Minimum Performance Standards:

NOTE: Each objective will be performed at 70% accuracy.

*Objective 1: The student will match designated terms related to manufacturing with correct definitions.
*Objective 2: The student will distinguish between the three types of manufacturing systems.
*Objective 3: The student will select from a list the characteristics of free enterprise.
Objective 4: The student will list the five components of manufacturing enterprises.
Objective 5: The student will list the five functions of a manufacturing enterprise.
*Objective 6: The student will identify the three forms of manufacturing enterprise ownerships.
Objective 7: The student will complete three statements concerning the importance of ownership in the United States.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Matched terms related to manufacturing systems with the correct definitions
____*2. Distinguished between the types of manufacturing systems.
____*3. Determined the characteristics of free enterprise.
____ 4. Listed the main components of a manufacturing enterprise.
____ 5. Stated the functions of management of a manufacturing enterprise.
____*6. Identified the forms of ownership of manufacturing enterprises.
_____7. Completed statements concerning the importance of different forms of ownership in the United States.

* Indicates core/essential objectives

Course: Technology Education I: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 3: Manufacturing Materials and Evaluation

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Identify common manufacturing materials and the correct descriptions of these materials.
2. Identify general properties of materials and the correct descriptions of these general properties.
*3. List the factors to be considered when choosing materials.
*4. Identify the terms that apply to the purchase of designated materials.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Locate and present different types of manufacturing materials to the class.
2. Field Trip
3. Film or Videotape
4. Construct posters on selected types of manufacturing materials.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education." 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

Team Leader's Handbook for Vocational Curricula

Evaluation and Suggested Minimum Performance Standards:

NOTE: Each objective will be performed at 70% accuracy.

*Objective 1: The students will identify manufacturing materials with the correct descriptions.
Objective 2: The student will identify general properties of materials with the correct descriptions.
*Objective 3: The student will list the five factors to be considered when choosing materials.
*Objective 4: The student will identify the terms that apply to the purchasing of designated materials.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Identified common manufacturing materials and the correct descriptions of these materials.
____2. Identified general properties of materials and the correct descriptions of these general properties.
____*3. Listed the factors to be considered when choosing materials.
____*4. Identified the terms that apply to the purchase of designated materials.

* Indicates core/essential objectives

Course: Technology Education I: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 4: Manufacturing and Marketing

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Match terms related to process planning with the correct definitions.
2. Complete statements describing the production activities that occur within a company.
*3. List the four major steps that occur during the production phase of a manufacturing operation.
*4. Identify the functions of marketing with the correct definitions.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Product Research and Selection (See Unit 6)
2. Design a flow chart for product selected.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364.

Secondary: Team Leader's Handbook for Standardizing Vocational Curricula

Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

Simulations, games, and related activities

Evaluation and Suggested Minimum Performance Standards:

Note: Objectives will be performed at 70% accuracy.

*Objective 1: The student will match terms related to process planning to the correct definitions.
Objective 2: The student will complete statements describing the production activities that occur within a company.
*Objective 3: The student will list the four major steps that occur during the production phase of a manufacturing operation.
*Objective 4: The student will identify the functions of marketing to the correct definitions with 70% accuracy.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Matched terms related to process planning with the correct definitions.
_____2. Completed statements describing the production activities that occur within a company.
____*3. Listed the four major steps that occur during the production phase of a manufacturing operation.
____*4. Identified the functions of marketing with the correct definitions.

* Indicates core/essential objectives

Course: Technology Education I: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 5: Careers in Manufacturing

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. List types of information needed to select a job.
*2. List types of personal information helpful in choosing a job.
*3. Describe how to match personal goals with job requirements.
4. List the resources one will have to work with on job.

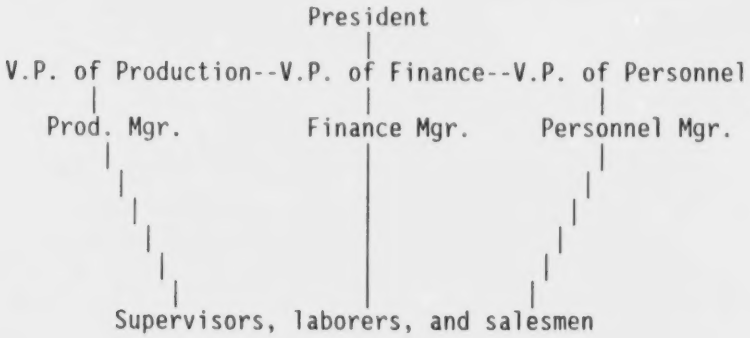
* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Role playing
2. Job Search and Related Interviewing Techniques
3. Use an Organizational Chart to allow students to interview for jobs listed on the chart. (See sample below.)



Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364.

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

Employment agency

Dictionary of Occupational Titles (DOT)

Armed Services; National Guard

Guidance Counselor

Evaluation and Suggested Minimum Performance Standards:

NOTE: Objectives to be performed at 70% accuracy.

*Objective 1: The student will list the three types of information needed in selecting a job.
*Objective 2: The student will list two types of personal information helpful in choosing a job.
*Objective 3: The student will describe at least three personal goals and match them with job requirements.
Objective 4: The student will list the three resources one will have to work with on a job.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Listed types of information needed to select a job.
____*2. Listed types of personal information helpful in choosing a job.
____*3. Described how to match personal goals with job requirements.
____4. Listed the resources one will have to work with on a job.

* Indicates core/essential objectives

Course: Technology Education I: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 4 1/2 weeks of instruction)

Unit 6: Manufacturing Processes

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Classify operations as pre-processing, processing, or post-processing.
2. Distinguish between primary and secondary manufacturing processes.
3. Identify the three major types of maintenance in manufacturing.
*4. Select true statements concerning general safety rules.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Student(s) will set up manufacturing operation to make a product or products.
   Example: Assembly-line process
2. Robotic Info Activity
3. Yo Yo Production Activity
4. Sprong Pong Activity

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

Simulations, Games, and Related Activities

Evaluation of Suggested Minimum Performance Standards:

Note: Objectives to be performed at 70% accuracy.

*Objective 1: The student will list the three classifications of processing.
Objective 2: The student will distinguish between primary and secondary manufacturing processes.
Objective 3: The student will identify the three major types of maintenance in manufacturing.
*Objective 4: The student will select from a given list all safety rules concerning general safety manufacturing processes.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Classified operations as pre-processing, processing, or post-processing.
_____2. Distinguished between primary and secondary manufacturing processes.
_____3. Identified the three major types of maintenance in manufacturing.
____*4. Selected true statements concerning general safety rules.

* Indicates core/essential objectives

Course: Technology Education I: Construction Technology Cluster
(7th Grade, 1 1/2 weeks of instruction)

Unit 1: Introduction to Construction

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Define construction technology.
2. List statements concerning how construction technology affects society.
3. List statements concerning the types of construction.
*4. Distinguish between construction technology careers.
*5. Identify the major types of construction in the community.
*6. Sketch a floor plan of a house.
*7. List construction careers involved in building a house.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations and laboratory practice
Presentation (visiting speaker)

Activities:

1. Make and label a scrapbook on various construction projects.
2. Field trips
3. Classroom discussion on the economic, social, and/or ecological effects of construction on society.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education, 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364.

Secondary: Exploring Construction, Henak, Richard M., Goodheart-Wilcox Co., Inc. Oklahoma (Unit 1)

Exploring Production, Wright/Henak

Production Technology, Feirer, John W. and Lindfeds, John R.

Construction (employers/employees)

School Shop and other magazines

Evaluation and Suggested Minimum Performance Standards:

NOTE: Objectives to be performed at 70% accuracy.

*Objective 1: The student will define construction technology.
Objective 2: The student will list statements concerning how construction technology affects society.
Objective 3: The student will list statements concerning the types of construction by providing the correct words.
*Objective 4: The student will match careers with correct definitions.
*Objective 5: The student will list three types of construction and materials used in each.
*Objective 6: The student will sketch a floor plan of a house.
*Objective 7: The student will list construction careers involved in building a house.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Defined construction techology.
_____2. Listed statements concerning how construction technology affects society.
_____3. Listed statements concerning the types of construction.
____*4. Distinguished between construction technology careers.
____*5. Identified the major types of construction in the community.
____*6. Sketched a floor plan of a house.
____*7. Listed construction careers involved in building a house.

* Indicates core/essential objectives

Course: Technology Education I: Construction Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 2: Contracting

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. List and discuss the types of contractors.
*2. Define contract.
*3. List the kinds of contracts.
*4. Define estimate.
5. List the factors in determining an estimate.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Presentation (visiting resource person)

Activities:

Each student will develop a contract according to teacher's instruction.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Local contractor
Local attorney

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will list and discuss three kinds of contractors.
*Objective 2: The student will define the term "contract."
*Objective 3: The student will list the three kinds of contracts.
*Objective 4: The student will define the term "estimate."
Objective 5: The student will list five factors in determining an estimate.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Listed and discussed the types of contractors.
____*2. Defined contract.
____*3. Listed the kinds of contracts.
____*4. Defined estimate.
_____5. Listed the factors in determining an estimate.

* Indicates core/essential objectives

Course: Technology Education I: Construction Technology Cluster
(8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 3: Design and Planning

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Define terms related to project planning.
2. List components of a construction system model.
3. List the steps in the construction process.
*4. Identify construction materials and uses.
*5. Identify types of constructions.
*6. Identify units of measurement.
*7. Identify graduations on a standard rule.
*8. Demonstrate the ability to read a ruler.
9. Design a construction project.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations and laboratory practice

Activities:

1. Students will be assigned to bring construction materials to class.
2. Students will measure and/or cut stock to specifications.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Exploring Production, Wright/Henak, Goodheart-Wilcox Co., Inc.

Exploring Construction, Henak, Richard M., Goodheart-Wilcox Co., Inc.

Technology For Tomorrow, Williams/Bradshaw/Daggett, South-Western Publishing Co., 1985.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will define terms that relate to project planning.
Objective 2: The student will list and discuss three components of a construction system model.
Objective 3: The student will correctly identify six steps in the construction process.
*Objective 4: The student will identify various construction materials and their uses.
*Objective 5: The student will identify types of constructions.
*Objective 6: The student will identify the units of measurements.
*Objective 7: The student will identify graduations on a standard rule.
*Objective 8: The student will correctly measure different lines or objects.
Objective 9: The student will design a construction project (bridge, house, tower).

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Defined terms related to project planning.
____2. Listed components of a construction system model.
____3. Listed the steps in the construction process.
____*4. Identified various construction materials and uses.
____*5. Identified types of constructions.
____*6. Identified units of measurement.
____*7. Identified graduations on a standard rule.
____*8. Demonstrated the ability to read a ruler.
____9. Designed a construction project.

* Indicates core/essential objectives

Course: Technology Education I: Construction Technology Cluster
(7th, 8th, 9th Grades, 4 1/2 weeks of instruction)

Unit 4: Building the Structure

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Define terms related to building a structure.
*2. List factors to be considered in clearing a construction site.
*3. List methods used to clear a site.
4. Describe methods used in framing a structure.
*5. Identify tools and equipment used in general construction.
*6. List precautions to follow in the care of tools.
*7. Identify construction safety rules.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations and laboratory practice
Presentation (visiting speaker)

Activities:

1. Students will prepare a site using a constructed site box.
2. Students will build a concrete form.
3. Each student will prepare a safety poster.
4. Students should construct a model.
5. Design, build, and stress test a teacher approved project.
6. Pneumatic Structures Activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Exploring Construction, Henak, Richard M., Goodheart-Wilcox Co., Inc.

Resource people from the community

Exploring Production, Wright/Henak, Goodheart-Wilcox Co., Inc.

Evaluation and Suggested Minimum Performance Standards:

Note: Objectives to be performed at 70% accuracy.

*Objective 1: The student will define terms related to building a structure.
*Objective 2: The student will list seven factors to be considered in clearing a construction site.
*Objective 3: The student will list and discuss five methods to clear a site.
Objective 4: The student will match twelve terms that relate to framing a structure to their correct definitions.
*Objective 5: The student will identify tools and equipment used in general construction.
*Objective 6: The student will list precautions to follow in the care of tools.
*Objective 7: The student will identify construction safety rules.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Defined terms related to building a structure.
____*2. Listed factors to be considered when clearing a construction site.
____*3. Listed methods used to clear a site.
____4. Described methods used in framing a structure.
____*5. Identified tools and equipment used in general construction.
____*6. Listed precautions to follow in the care of tools.
____*7. Identified construction safety rules.

* Indicates core/essential objectives

Course: Technology Education I: Construction Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 5: Finishing the Structure

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Define terms related to finishing a project.
2. Discuss climate control processes.
3. List the different types of solar systems.
*4. List the purposes of the plumbing system.
*5. List the two major uses of electrical systems.
*6. List the three phases of finishing a project.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations and laboratory practices
Presentation (visiting speaker)

Activities:

1. Construct a project which will explain how a heating system works. (See NOTE below or Dr. Kenneth Simmons).
2. Collect samples of materials needed to finish a structure.
3. Construct a simple solar project.
4. Finish-out the previously constructed model.

NOTE: Contact Dr. Kenneth Simmons for details about this activity. He can be reached at the following address:

Dr. Kenneth Simmons, Professor
Industrial Technology
Department of Industrial Technology
Alcorn State University
Lorman, MS 39096

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Exploring Construction, Henak, Richard M., Goodheart-Wilcox Co., Inc.

Resource people from the community

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will define terms that relate to finishing a project.
Objective 2: The student will list three types of climate control processes and match these processes with the correct definitions.
Objective 3: The student will list two types of solar systems and match these systems with the correct definitions.
*Objective 4: The student will list two reasons why the plumbing system is important.
*Objective 5: The student will list two uses of the electrical system.
*Objective 6: The student will list three phases of finishing and discuss each phase of finishing.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Defined terms relating to finishing a product.
____2. Discussed climate control processes.
____3. Listed the different types of solar systems.
____*4. Listed the purposes of the plumbing system.
____*5. Listed two major uses of electrical systems.
____*6. Listed the three phases of finishing a project.

* Indicates core/essential objectives

Course: Technology Education I: Construction Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 6: Occupational and Career Opportunity

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Describe jobs in the construction field and their requirements.
2. List educational programs related to construction.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Guest speakers

Activities:

Simulate a labor management negotiation.
Research a construction career.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Exploring Production, Wright/Henak, Goodheart-Wilcox Co.

Local Labor Unions, Management

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will describe five jobs in the construction field.
Objective 2: The student will list educational programs related to construction.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Described jobs in the construction field and their requirements.
_____2. Listed educational programs related to construction.

* Indicates core/essential objectives

Course: Technology Education I: Communication Technology Cluster
(7th Grade, 1 1/2 weeks of instruction)

Unit 1: Introduction to Communication Technology

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Discuss the impact of communication on society.
2. List the major developments in the history of communication.
3. List areas of advanced technology used in the area of communication.
*4. Classify careers in visual communication.
*5. Classify careers in audiovisual communication.
*6. Identify steps in the communication process.
*7. Distinguish between the types of communication.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Audio-visual materials
Handout sheets
Guest speakers

Activities:

1. Students will write a one-page report on Communication Technology. Objectives 1, 2, and 3 will be included in the report.
2. Career reports will be assigned to students for Objectives 4 and 5. Each student will be given 2 - 5 minutes to speak.
3. Guest speaker
4. Telegraph; string and can phone

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Seymour, D. Richard, Ritz, M. John, and Cloghessy, A. Florence, Exploring Communications, Goodheart-Wilcox Company, Inc.

Discovering Technology Communication, Jones and Robb, Harcourt-Brace Jovanovich, Publishers.

Speech department

Library

Students visit someone in field.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will demonstrate his or her understanding of the impact of communication on society by writing a one page report.
Objective 2: The student will list four of the major developments in the history of communication.
Objective 3: The student will list five areas of advanced technology in the area of communication.
*Objective 4: The student will list and identify five careers in the area of visual communication.
*Objective 5: The student will list and identify five careers in the area of audiovisual communication.
*Objective 6: The student will list and explain the four steps in a communication system.
*Objective 7: The student will explain the difference between the three types of communication system.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Discussed the impact of communication on society.
____2. Listed the major developments in the history of communications.
____3. Listed areas of advanced technology used in the area of communication.
____*4. Classified careers in visual communications.
____*5. Classified careers in audiovisual communications.
____*6. Identified steps in the communication process.
____*7. Distinguished between the types of communication.

* Indicates core/essential objectives

Course: Technology Education I: Communication Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 2: Sketching and Measurement

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Sketch the basic forms that make up an object.
2. Identify major components of linear metric measurement.
*3. Identify major components of linear English measurements.
*4. Read units of measurement in the English and metric system.
5. Measure given lines using the 1/8, 1/4, 1/2, 3/8, and 1 inch scales using an architect's scale.
*6. Measure given lines using centimeter and millimeter scales.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Handouts

Activities:

1. Students will sketch the basic forms from handouts.
2. Measure geometric figures in the English and metric systems.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Modern General Shop, Goodheart-Wilcox Company, Inc.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will sketch circles, squares, and triangles.
Objective 2: The student will identify millimeters, centimeters, and meters and convert from one unit to the other units.
*Objective 3: The student will identify feet, inches, and fractional parts of an inch and convert fractional units.
*Objective 4: The student will measure with all units on a standard twelve-inch rule.

Objective 5: The student will measure given lines using the 1/8, 1/4, 1/2, 3/8, and 1 inch scales on the architect's scale.

*Objective 6: The student will measure given lines using centimeter and millimeter scales.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Sketched the basic forms that make up an object.
____2. Identified major components of linear metric measurement.
____*3. Identified major components of linear English measurements.
____*4. Read units of measurement in the English and metric systems.
____5. Measured given lines using 1/8, 1/4, 1/2, 3/8, and 1 inch scales on the architect's scale.
____*6. Measured given lines using centimeter and millimeter scales.

* Indicates core/essential objectives

Course: Technology Education I: Communication Technology Cluster
(8th, 9th Grades, 4 1/2 weeks of instruction)

Unit 3: Orthographic and Isometric Drawings

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Identify basic drafting tools and equipment.
*2. Identify the alphabet of lines.
*3. Draw an orthographic projection from a pictorial view.
*4. Dimension an orthographic projection.
5. Draw a simple isometric view.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion

Activities:

1. Teacher demonstration and discussion of each drafting tool.
2. Draw geometric figures using the English and metric systems of measurement as prescribed by instructor.
3. Construct a model from the drawing done previously.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Modern General Shop, Goodheart-Wilcox Company, Inc.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will identify the following tools: Drawing board, T-Square, compass, 30-60 degree and 45 degree triangles, and the architect's scale.
*Objective 2: The student will list and describe the following lines: Border, object, center, hidden, dimension, extension, and section lines from a drawing.
*Objective 3: The student will draw a three-view orthographic projection from a dimensional pictorial view.
*Objective 4: The student will correctly place dimensions on the three-view drawing.

Objective 5: The student will construct a simple isometric drawing with the 30-60 degree triangle.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Identified basic drafting tools and equipment.
____*2. Identified the alphabet of lines.
____*3. Drew an orthographic projection from a pictorial view.
____*4. Dimensioned an orthographic projection.
____5. Drew a simple isometric drawing.

* Indicates core/essential objectives

Course: Technology Education I: Communication Technology Cluster (7th, 8th, 9th Grades, 1 week of instruction)

Unit 4: Computer Utilization and CAD

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Distinguish basic computer hardware and identify input-output devices.
*2. Identify key words associated with CAD.
3. Conduct research with CAD applications.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and demonstrations

Activities:

1. Teacher demonstration and discussion using a CAD system.
2. Teacher demonstration and discussion using handouts and study sheets to run and load programs.
3. Students will copy diskette using Disk Copy Command to blank handouts.
4. The student will code a simple program in the basic language and output the program to the printer.
5. The student will draw a simple one-view drawing on the screen.
6. The student will draw a three-view drawing on the screen.
7. The student will dimension the three-view drawing.
8. The student will plot or print the drawing.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Computer Skills (Basic Vocational Skills) Research and Curriculum Unit - (Mississippi State University)

Seymour, Ritz, and Cloghessy, Exploring Communications, Goodheart-Wilcox Company, Inc.

CAD DRAW, Hearlitz and Company.

CAD Handouts

Drafting/CAD Magazines

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will identify a disk drive, keyboard, monitor, and printer.
*Objective 2: The student will identify the following key words: Load, run, save, and list.
Objective 3: The student will demonstrate understanding of CAD by researching the topic and making a presentation.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Distinguished basic computer hardware and identified input-output devices.
____*2. Identified key words associated with CAD.
____3. Conducted research with CAD applications.

* Indicates core/essential objectives

Course: Technology Education I: Communication Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 5: Electronic Communication

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Identify the major areas of electronic communication systems.
2. Discuss the historical developments of electronic communication.
3. Discuss recent developments in electronic communication.
*4. List key words related to electronic communication.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and demonstrations

Activities:

1. Small group competition in which students will identify major areas of electronic communication systems by using a time line continuum.
2. Filmstrip (Southern Bell Films)
3. Students will identify key words related to electronic communication by using a)aword search handout (Band matching appropriate words to definitions.
4. Students will play the roles of each component or major area of a telephone. (Class demonstration)
5. Students will label each component of a telephone.
6. Students will identify parts and describe the system of a solar dish. (Build a small scale solar dish.)
7. Light wave communications activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Seymour, Ritz, and Cloghessy, Exploring Communications, Goodheart-Wilcox Co., Inc.

Telecommunication Companies
Jones and Robb, Discovering Technology Communications, Harcourt-Brace, Publishers.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will identify the major areas of electronic communication systems.
Objective 2: The student will discuss four historical developments that have affected electronic communications.
Objective 3: The student will discuss recent developments in electronic communications.
*Objective 4: The student will list ten key words related to electronic communication.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

___*1. Identified the major areas of electronic communication systems.
___2. Discussed the historical developments of electronic communication.
___3. Discussed recent developments in electronic communication.
___*4. Listed key words related to electronic communication.

* Indicates core/essential objectives

Course: Technology Education I: Communication Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 6: Graphic Arts

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Describe the development of graphic communication methods.
*2. Identify the major types of printing techniques used in graphic communication.
3. Cite the uses of printing procedures in consumer and industrial products.
*4. List careers in graphic communications.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Demonstration

Activities:

1. Students will identify the time line of the development of graphic equipment and material. (Cave men to holograph)
2. Students will identify methods of printing used on various products, newspapers, signs, etc.
3. Field trip to newspaper company.
4. The student will make a simple design transfer using the flat surface of a cut potato and ink pod.
5. Students will silk screen an emblem design using a silk screen kit.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Seymour, Ritz, and Cloghessy, Exploring Communications, Goodheart-Wilcox Co., Inc.

Jones and Robb, Discovering Technology Communication, Harcourt-Brace Publishing Co.

National Geographic

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will describe developments in communication methods.
*Objective 2: The student will identify the major types of printing techniques.
Objective 3: The student will cite the uses of printing procedures used in consumer and industrial products.
*Objective 4: The student will list four careers in the area of graphic communication.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Described the development of graphic communication methods.
____*2. Identified the major types of printing techniques used in graphic communication.
_____3. Cited the uses of printing procedures in consumer and industrial products.
____*4. Listed careers in graphic communication.

* Indicates core/essential objectives

Course: Technology Education I: Communication Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 7: Photography

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Identify the basic parts of a camera.
2. Describe the function of the aperture and shutter.
*3. Identify the basic types of cameras.
*4. List and describe the differences between the four types of camera lenses.
*5. Load film and shoot pictures with 35mm and instamatic cameras.

* Indicates core/essential objectives

Suggested Instructional Practices:

Demonstrations, viewing films, and video tapes

Activities:

1. Practice loading camera with exposed film.
2. Simulate or perform film processing.
3. Pin-hole camera activity.
4. Video production activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Jones and Robb, Discovering Technology Communications, Harcourt-Brace Jovanovich, Publishers.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will identify from a chart or picture the basic parts of a camera.
Objective 2: The student will write a paragraph describing the function of the camera aperture and shutter.
*Objective 3: The student will identify the four types of cameras using cameras or pictures.
*Objective 4: The student will list and describe the differences between the four camera lenses using models or pictures.

*Objective 5: The student will load film and make pictures with 35mm and instamatic cameras.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Identified the basic parts of a camera.
____2. Described the function of the aperture and shutter.
____*3. Identified the basic types of cameras.
____*4. Listed and described the differences between the four types of camera lenses.
____*5. Loaded film and shot pictures with 35mm and instamatic cameras.

* Indicates core/essential objectives

Course: Technology Education I: Communication Technology Cluster
(8th, 9th Grades, 3 weeks of instruction)

Unit 8: Career and Leadership Opportunities

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Research a career.
*2. Conduct a career interview.
*3. Complete a job application form.
*4. Interview for a job.
*5. Identify job-keeping skills from a list.
6. Conduct a business meeting using parliamentary procedures.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Audio-visual materials
Handout sheets
Class demonstrations

Activities:

1. Interview a worker in the occupation of student's choice.
2. Role playing interviews. Practice with other students. Prepare an audio/video tape for class.

Suggested Resources:

Primary: Research and Curriculum Unit, "Basic Vocational Education," 1987, Drawer DX, Mississippi State, MS 39762

Secondary: Occupational Outlook Handbook

Seymour, Ritz, and Cloghessy, Exploring Communications, Goodheart-Wilcox Co., Inc.

AIASA Competitive Events Guide

Teacher handout on the Competitive Events' guidelines with discussion. (AIASA Guidelines)

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will select one career and research the career using the Occupational Outlook Handbook as a guide.

*Objective 2: The student will conduct a career interview either in person or by phone using a teacher constructed checklist.

*Objective 3: The student will accurately complete a job application form.

*Objective 4: The student will successfully complete the job interview process.

*Objective 5: The student will match 75% of the job-keeping skills from a list.

Objective 6: The student will conduct a business meeting using parliamentary procedures.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

___ *1. Researched a career.
___ *2. Conducted a career interview.
___ *3. Completed a job application form.
___ *4. Interviewed for a job.
___ *5. Identified job-keeping skills from a list.
___ 6. Conducted a business meeting using parliamentary procedure.

* Indicates core/essential objectives

Course: Technology Education I: Transportation (Energy and Power) Cluster (7th, and 8th Grades, 1 1/2 weeks of instruction)

Unit 1: Introduction to Energy and Power Systems

Objective(s): Upon completion of this unit, the student should be able to do the following:

1. Define a fluid system.
*2. Define an electrical system.
*3. Define a mechanical system.
*4. Define an electronic system.
*5. List at least five sources of energy.
*6. List five general safety rules and practices.
7. List five ways a computer can be used in transportation technology.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations
Hands-on activities
Field trips
Job sheets
Test - pre-post

Activities:

1. Perform an activity using a laser to demonstrate various types of energy systems.
2. Distinguish between power and energy by demonstrating how energy and power are using research and experimentation techniques.
3. Write a short essay on the different forms of energy and discuss the advantages and disadvantages of each.
4. Exhibit safe working habits by demonstrating how to start and stop a small gas engine such as a Briggs & Stratton type.
5. Disassemble a mechanical device, study its principles of operation, and re-assemble it.
6. Demonstrate how electronic systems on small gas engines work.
7. List five sources of energy and present them illustrated on a poster.
8. Draw a poster which explains safety procedures to follow with selected power and energy systems.
9. Observe and listen to an Air Traffic Controller and write a report.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: General Industry Education and Technology, 7th Ed., Groveman and Fierer, McGraw-Hill, Publishers.

Resource Person

Related Transparencies

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will correctly define a fluid system.
*Objective 2: The student will correctly define an electrical system.
*Objective 3: The student will correctly define a mechanical system.
*Objective 4: The student will correctly define an electronic system.
*Objective 5: The student will list at least five of the sources of energy.
*Objective 6: The student will list five general safety rules or practices.
Objective 7: The student will list five ways a computer can be used in transportation technology.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____1. Defined a fluid system.
____*2. Defined an electrical system.
____*3. Defined a mechanical system.
____*4. Defined an electronic system.
____*5. Listed at least five sources of energy.
____*6. Listed five general safety rules and practices.
____7. Listed five ways a computer can be used in transportation technology.

* Indicates core/essential objectives

Course: Technology Education I: Transportation (Energy and Power) Cluster (7th, 8th Grades, 1 1/2 weeks of instruction)

Unit 2: Energy and Power Systems

Objective(s): Upon completion of this unit, the student should be able to do the following:

1. Describe the components of a fluid system and list five uses of a fluid system.
*2. Describe the components of a mechanical system and list five uses of a mechanical system.
*3. Describe the components of an electrical system and list five uses of an electrical system.
4. Describe the components of an electronic system and list five uses of an electronic system.
*5. Describe the components of a transportation system.
6. Define laser energy and list five uses of laser energy.
*7. Define nuclear energy and list five uses of nuclear energy.
*8. Define five natural energy sources and list five uses of natural energy sources.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations
Hands-on activities
Test - pre-post

Activities:

1. Construct a small manually operated fluid power system.
2. Assemble and disassemble a small simple gas engine.
3. Draw and read a schematic diagram of an electric circuit.
4. Construct a small electric motor.
5. Visit a nearby electric power generating plant and study its operation.
6. Design a project which has moving parts that are powered by a fluid system.
7. Demonstrate the use of pneumatics to move parts.
8. Laser activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: General Industry Education and Technology, 7th Ed., Groveman and Fierer, McGraw-Hill, Publishers.

Resource person

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will describe the components of a fluid system and list five uses of a fluid system.

*Objective 2: The student will describe the components of a mechanical system and list five uses of a mechanical system.

*Objective 3: The student will describe the components of an electrical system and list five uses of an electrical system.

Objective 4: The student will describe the components of an electronic system and list five uses of an electronic system.

*Objective 5: The student will describe the components of the transportation system.

Objective 6: The student will correctly define laser energy and list five uses of laser energy.

*Objective 7: The student will correctly define nuclear energy and list five uses of nuclear energy.

*Objective 8: The student will correctly define five natural energy sources and list five uses of natural energy sources.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____1. Described the components of a fluid system and listed five uses of a fluid system.

___*2. Described the components of a mechanical system and listed five uses of a mechanical system.

___*3. Described the components of an electrical system and listed five uses of an electrical system.

____4. Described the components of an electronic system and listed five uses of an electronic system.

___*5. Described the components of a transportation system.

____6. Defined laser energy and listed five uses of laser energy.

____*7. Defined nuclear energy and listed five uses of nuclear energy.

____*8. Defined five natural energy sources and listed five uses of natural energy sources.

* Indicates core/essential objectives

Course: Technology Education I: Transportation (Energy and Power) Cluster (8th, 9th Grades, 3 weeks of instruction)

Unit 3: Engines

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Describe the difference between internal and external engines.
*2. List five types of engines used today.
3. List five different uses of each type of engine.
4. List ten different tools used in the assembly and disassembly of engines.
*5. List six major parts of the two-cycle engine.
*6. List six major parts of the four-cycle engine.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Test - pre-post
Objective sheets
Reteach

Activities:

1. Prepare a chart on how one of the following combustion engines works: (a) automobile, (b) diesel, (c) jet engine, (d) rocket engine, (e) gas turbine engine, and (f) rotating combustion engine.
2. When presented with an illustration (flash cards) or physical part of (a) air cleaner, (b) head, (c) spark plug, (d) fly wheel, (e) valves, (f) cam shaft, (g) piston, (h) cylinder, (i) fuel tank, (j) fuel pump, (k) block, (l) carburetor, (m) oil pump, (n) crank shaft, (o) connecting rod, and (p) piston rings, correctly identify them and explain their operation and function.
3. Demonstrate the principle of action and re-action using a balloon, a length of fine wire or fishing line, masking tape, and a plastic straw. Blow up the balloon and place a clamping device (clothespin) over its end. Using masking tape, attach the straw evenly across the top of the balloon. Thread the wire/line through the straw and connect it opposite ends of a room. Then, release the clamp. Explain the balloon's actions relative to a jet engine's operations.
4. Construct a Metric 500 model.

5. Break down a two or four cycle engine; name and explain the function of each part.
6. Close the adjusting screw, shutting off the gas coming into the carburetor. Explain what happened to the engine and why it happened. Now, open the adjusting screw. Explain what happens and why it happens.
7. Model Rocketry Activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Purvis, Jud, "All About Small Gas Engines, How to Fix All Kinds of 2-cycle and 4-cycle Engines," 1960, The Goodheart-Wilcox Company, Inc.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will describe the difference between internal and external engines.
*Objective 2: The student will list five types of engines used today.
Objective 3: The student will list five different uses of each type of engine.
Objective 4: The student will list ten different tools used in the assembly and disassembly of engines.
*Objective 5: The student will list six major parts of the two-cycle engine.
*Objective 6: The student will list six major parts of the four-cycle engine.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Described the difference between internal and external engines.
____*2. Listed five types of engines used today.
____3. Listed five different uses of each type of engine.
____4. Listed ten different tools used in the assembly and disassembly of engines.
____*5. Listed six major parts of the two-cycle engine.
____*6. Listed six major parts of the four-cycle engine.

* Indicates core/essential objectives

Course: Technology Education I: Transportation (Energy and Power) Cluster (7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 4: Impacts of Energy/Power/Transportation

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. List five steps in the conservation of expendable natural resources.
*2. Define pollution.
*3. List five harmful effects of pollution.
4. List five sources of pollution.
5. Explain five social concerns relative to energy, power, and transportation.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Test - pre-post
Hands-on activities
Objective sheets
Reteach/Retest

Activities:

1. Construct a poster describing different forms of pollution.
2. Write a report to accompany the poster which further explains the various forms pollution takes.
3. Identify local sources of pollution.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: A-V Materials

Resource person

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will list five steps in the conservation of expendable natural resources.
*Objective 2: The student will define pollution.

*Objective 3: The student will list five harmful effects of pollution.
Objective 4: The student will list five sources of pollution.
Objective 5: The student will explain five social concerns relative to energy, power, and transportation.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Listed five steps in conservation of expendable natural resources.
____*2. Defined pollution.
____*3. Listed five harmful effects of pollution.
____4. Listed five sources of pollution.
____5. Explained five social concerns relative to energy, power, and transportation.

* Indicates core/essential objectives

Course: Technology Education I: Transportation (Energy and Power) Cluster (7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 5: Career and Leadership Opportunities

Objective(s): Upon completion of this unit, the student should be able to do the following:

1. Describe careers that are available in power and energy industries.
*2. Define free enterprise.
3. Define entrepreneurship.
4. Define professional careers.
*5. Define skilled labor.
*6. Define semi-skilled labor.
*7. Define unskilled labor.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Test - pre-post
Reteach/Retest

Activities:

1. View filmstrips in which people describe their jobs.
2. Complete job applications.
3. Participate in a "mock" job interview conducted by a local employer.
4. Role playing in employer/employee situations. This should include deciding why to fire or hire situations.
5. Boat Hull Design.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: D. McCrory, K. Todd, R. Todd, "Understanding and Using Technology," 1985, Davis Publications, Inc. Worchester, MA.

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will list eight careers in both power and energy industries.
*Objective 2: The student will define free enterprise.
Objective 3: The student will define entrepreneurship.
Objective 4: The student will define professional careers.
*Objective 5: The student will define skilled labor.
*Objective 6: The student will define semi-skilled labor.
*Objective 7: The student will define unskilled labor.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

_____1. Described careers that are available in both power and energy industries.
____*2. Defined free enterprise.
_____3. Defined entrepreneurship.
_____4. Defined professional careers.
____*5. Defined skilled labor.
____*6. Defined semi-skilled labor.
____*7. Defined unskilled labor.

* Indicates core/essential objectives

Standardized Curriculum For

Technology Education II

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STANDARDIZED CURRICULA

FOR

TECHNOLOGY EDUCATION II PROGRAMS

MISSISSIPPI DEPARTMENT OF EDUCATION

OFFICE OF VOCATIONAL, TECHNICAL,

AND ADULT EDUCATION

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Direct inquiries to:

Lynn Basham, State Supervisor
Technology Education Programs
Office of Vocational, Technical, and Adult Education
Box 771
Jackson, Mississippi 39205
Phone: (601) 359-3941

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TECHNOLOGY EDUCATION II

Manufacturing Technology Cluster

- Unit 1: Introduction to Manufacturing Technology
- Unit 2: Types of Manufacturing Systems
- Unit 3: Manufacturing Materials and Evaluation
- Unit 4: Manufacturing and Marketing
- Unit 5: Careers in Manufacturing
- Unit 6: Manufacturing Processes

Construction Technology Cluster

- Unit 1: Introduction to Construction
- Unit 2: Contracting
- Unit 3: Design and Planning
- Unit 4: Building the Structure
- Unit 5: Finishing the Structure
- Unit 6: Occupational and Career Opportunity

Communication Technology Cluster

- Unit 1: Introduction to Communication Technology
- Unit 2: Sketching and Measurement
- Unit 3: Orthographic and Isometric Drawings
- Unit 4: Computer Utilization and CAD
- Unit 5: Electronic Communication
- Unit 6: Graphic Arts
- Unit 7: Photography

Transportation (Energy and Power) Cluster

- Unit 1: Introduction to Energy and Power Systems
- Unit 2: Energy and Power Systems
- Unit 3: Engines
- Unit 4: Impacts of Energy/Power/Transportation
- Unit 5: Career and Leadership Opportunities

Course: Technology Education II: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 1: Introduction to Manufacturing Technology

Objective(s): Upon completion of this unit, the student should be able to do the following:

1. Identify statements concerning the historical perspective of manufacturing.
*2. Differentiate between production, manufacturing, and construction.
3. Identify the components of a manufacturing system according to the universal system model.
*4. Identify the areas of a manufacturing organization and the correct function of each area.
*5. Discuss general industrial and laboratory safety rules and explain the purpose of each rule.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Group Exercise "A Manufacturing Company, Its Structure, and Its Components"
2. Industrial Park Operations: Establish an industrial park which includes several companies, an airport, waterways, utilities, roads, railroads, etc. Include a city layout and plans for future expansions. Use materials such as boxes and tape to construct the model.
3. Instead of No. 2 above, set up a company model showing the typical divisions: office, plant, parts and maintenance, etc.
4. Locate manufacturing on a time line.
5. "Label" each student with a component of manufacturing. Then, send each student to the correct area set aside for part of the universal system model and allow them to explain why they are there. Use signs, hats, or something similar for labels.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987.

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

AIASA Competitive Events Guide

Visual Aids

Mississippi R & D Center, Jackson

Evaluation and Suggested Minimum Performance Standards:

Note: Each objective will be performed at 70% accuracy.

Objective 1: The student will complete statements concerning the historical perspective of manufacturing.
*Objective 2: The student will differentiate between the terms production, manufacturing, and construction.
Objective 3: The student will identify the four components of manufacturing as they relate to the universal system model.
*Objective 4: The student will match the areas of manufacturing to their correct functions.
*Objective 5: The student will score 70% on a general safety rules test.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____1. Identified statements concerning the historical perspective of manufacturing.
___*2. Differentiated between production, manufacturing, and construction.
____3. Identified the components of a manufacturing system according to the universal system model.
___*4. Identified the areas of a manufacturing organization and the correct function of each area.
___*5. Discussed general industrial and laboratory safety rules and explained the purpose of each rule.

* Indicates core/essential objectives

Course: Technology Education II: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 2: Types of Manufacturing Systems

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Match the terms related to manufacturing systems with the correct definitions.
*2. Distinguish between the types of manufacturing systems.
*3. Determine the characteristics of free enterprise.
4. List the main components of a manufacturing enterprise.
*5. State the functions of management of a manufacturing enterprise.
*6. Identify the forms of ownership of manufacturing enterprises.
7. Complete statements concerning the importance of the different forms of ownership in the United States.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Set up examples of the three types of company ownership using students to represent each. Consider using resource persons who represent each type of ownership.
2. Draw an organizational chart for a company.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education." 1987.

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

AIASA Competitive Events Guide

Evaluation and Suggested Minimum Performance Standards:

NOTE: Each objective will be performed at 70% accuracy.

*Objective 1: The student will match designated terms related to manufacturing with correct definitions.
*Objective 2: The student will distinguish between the three types of manufacturing systems.
*Objective 3: The student will select from a list the characteristics of free enterprise.
Objective 4: The student will list the five components of manufacturing enterprises.
*Objective 5: The student will list the five functions of a manufacturing enterprise.
*Objective 6: The student will identify the three forms of manufacturing enterprise ownerships.
Objective 7: The student will complete three statements concerning the importance of ownership in the United States.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Matched terms related to manufacturing systems with the correct definitions.
____*2. Distinguished between the types of manufacturing systems.
____*3. Determined the characteristics of free enterprise.
____ 4. Listed the main components of a manufacturing enterprise.
____*5. Stated the functions of management of a manufacturing enterprise.
____*6. Identified the forms of ownership of manufacturing enterprises.
_____7. Completed statements concerning the importance of different forms of ownership in the United States.

* Indicates core/essential objectives

Course: Technology Education II: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 3: Manufacturing Materials and Evaluation

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Identify common manufacturing materials and the correct descriptions of these materials.
*2. Identify general properties of materials and the correct descriptions of these general properties.
*3. List the factors to be considered when choosing materials.
*4. Identify the terms that apply to the purchase of designated materials.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Locate and present different types of manufacturing materials to the class.
2. Field Trip
3. Film or Videotape
4. Construct posters on selected types of manufacturing materials.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education." 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

Team Leader's Handbook for Vocational Curricula

Evaluation and Suggested Minimum Performance Standards:

NOTE: Each objective will be performed at 70% accuracy.

*Objective 1: The students will identify manufacturing materials with the correct descriptions.
*Objective 2: The student will identify general properties of materials with the correct descriptions.
*Objective 3: The student will list the five factors to be considered when choosing materials.
*Objective 4: The student will identify the terms that apply to the purchasing of designated materials.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Identified common manufacturing materials and the correct descriptions of these materials.
____*2. Identified general properties of materials and the correct descriptions of these general properties.
____*3. Listed the factors to be considered when choosing materials.
____*4. Identified the terms that apply to the purchase of designated materials.

* Indicates core/essential objectives

Course: Technology Education II: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 4: Manufacturing and Marketing

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Match terms related to process planning with the correct definitions.
*2. Complete statements describing the production activities that occur within a company.
*3. List the four major steps that occur during the production phase of a manufacturing operation.
*4. Identify the functions of marketing with the correct definitions.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Product Research and Selection (See Unit 6)
2. Design a flow chart for product selected.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364.

Secondary: Team Leader's Handbook for Standardizing Vocational Curricula

Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

Simulations, games, and related activities

Evaluation and Suggested Minimum Performance Standards:

Note: Objectives will be performed at 70% accuracy.

*Objective 1: The student will match terms related to process planning to the correct definitions.
*Objective 2: The student will complete statements describing the production activities that occur within a company.
*Objective 3: The student will list the four major steps that occur during the production phase of a manufacturing operation.
*Objective 4: The student will identify the functions of marketing to the correct definitions with 70% accuracy.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Matched terms related to process planning with the correct definitions.
____*2. Completed statements describing the production activities that occur within a company.
____*3. Listed the four major steps that occur during the production phase of a manufacturing operation.
____*4. Identified the functions of marketing with the correct definitions.

* Indicates core/essential objectives

Course: Technology Education II: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 5: Careers in Manufacturing

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. List types of information needed to select a job.
*2. List types of personal information helpful in choosing a job.
*3. Describe how to match personal goals with job requirements.
4. List the resources one will have to work with on job.

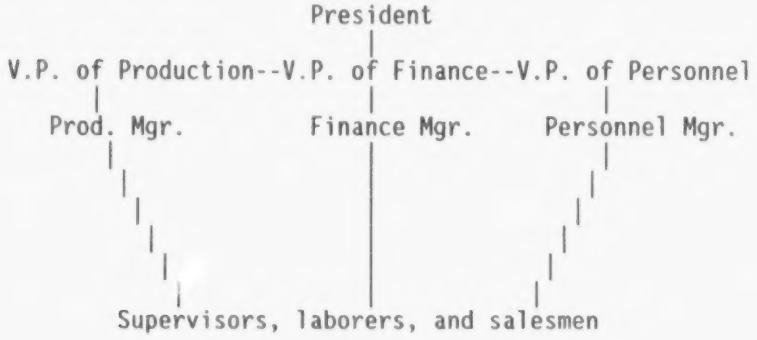
* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Role playing
2. Job Search and Related Interviewing Techniques
3. Use an Organizational Chart to allow students to interview for jobs listed on the chart. (See sample below.)



Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364.

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

Employment agency

Dictionary of Occupational Titles (DOT)

Armed Services; National Guard

Guidance Counselor

Evaluation and Suggested Minimum Performance Standards:

NOTE: Objectives to be performed at 70% accuracy.

*Objective 1: The student will list the three types of information needed in selecting a job.
*Objective 2: The student will list two types of personal information helpful in choosing a job.
*Objective 3: The student will describe at least three personal goals and match them with job requirements.
Objective 4: The student will list the three resources one will have to work with on a job.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Listed types of information needed to select a job.
____*2. Listed types of personal information helpful in choosing a job.
____*3. Described how to match personal goals with job requirements.
_____4. Listed the resources one will have to work with on a job.

* Indicates core/essential objectives

Course: Technology Education II: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 4 1/2 weeks of instruction)

Unit 6: Manufacturing Processes

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Classify operations as pre-processing, processing, or post-processing.
2. Distinguish between primary and secondary manufacturing processes.
*3. Identify the three major types of maintenance in manufacturing.
*4. Select true statements concerning general safety rules.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Student(s) will set up manufacturing operation to make a product or products.
   Example: Assembly-line process
2. Robotic Info Activity
3. Yo Yo Production Activity
4. Sprong Pong Activity

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

Simulations, Games, and Related Activities

Evaluation of Suggested Minimum Performance Standards:

Note: Objectives to be performed at 70% accuracy.

*Objective 1: The student will list the three classifications of processing.
Objective 2: The student will distinguish between primary and secondary manufacturing processes.
*Objective 3: The student will identify the three major types of maintenance in manufacturing.
*Objective 4: The student will select from a given list all safety rules concerning general safety manufacturing processes.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Classified operations as pre-processing, processing, or post-processing.
_____2. Distinguished between primary and secondary manufacturing processes.
____*3. Identified the three major types of maintenance in manufacturing.
____*4. Selected true statements concerning general safety rules.

* Indicates core/essential objectives

Course: Technology Education II: Construction Technology Cluster
(7th Grade, 1 1/2 weeks of instruction)

Unit 1: Introduction to Construction

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Define construction technology.
2. List statements concerning how construction technology affects society.
3. List statements concerning the types of construction.
*4. Distinguish between construction technology careers.
*5. Identify the major types of construction in the community.
*6. Research a construction technology career.
*7. Sketch a floor plan of a house.
*8. List construction careers involved in building a house.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations and laboratory practice
Presentation (visiting speaker)

Activities:

1. Make and label a scrapbook on various construction projects.
2. Field trips
3. Classroom discussion on the economic, social, and/or ecological effects of construction on society.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education, 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364.

Secondary: Exploring Construction, Henak, Richard M., Goodheart-Wilcox Co., Inc. Oklahoma (Unit 1)

Exploring Production, Wright/Henak

Production Technology, Feirer, John W. and Lindfeds, John R.

Construction (employers/employees)

School Shop and other magazines

Evaluation and Suggested Minimum Performance Standards:

NOTE: Objectives to be performed at 70% accuracy.

*Objective 1: The student will define construction technology.
Objective 2: The student will list statements concerning how construction technology affects society.
Objective 3: The student will list statements concerning the types of construction by providing the correct words.
*Objective 4: The student will match careers with correct definitions.
*Objective 5: The student will list three types of construction and materials used in each.
*Objective 6: The student will list three construction careers and state required training, working conditions, and future possibilities of employment.
*Objective 7: The student will sketch a floor plan of a house.
*Objective 8: The student will list construction careers involved in building a house.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Defined construction techology.
____2. Listed statements concerning how construction technology affects society.
____3. Listed statements concerning the types of construction.
____*4. Distinguished between construction technology careers.
____*5. Identified the major types of construction in the community.
____*6. Researched a construction technology career.
____*7. Sketched a floor plan of a house.
____*8. Listed construction careers involved in building a house.

* Indicates core/essential objectives

Course: Technology Education II: Construction Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 2: Contracting

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. List and discuss the types of contractors.
*2. Define contract.
*3. List the kinds of contracts.
*4. Define estimate.
5. List the factors in determining an estimate.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Presentation (visiting resource person)

Activities:

Each student will develop a contract according to teacher's instruction.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Local contractor
Local attorney

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will list and discuss three kinds of contractors.
*Objective 2: The student will define the term "contract."
*Objective 3: The student will list the three kinds of contracts.
*Objective 4: The student will define the term "estimate."
Objective 5: The student will list five factors in determining an estimate.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Listed and discussed the types of contractors.
____*2. Defined contract.
____*3. Listed the kinds of contracts.
____*4. Defined estimate.
_____5. Listed the factors in determining an estimate.

* Indicates core/essential objectives

Course: Technology Education II: Construction Technology Cluster
(8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 3: Design and Planning

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Define terms related to project planning.
2. List components of a construction system model.
3. List the steps in the construction process.
*4. Identify construction materials and uses.
*5. Identify types of constructions.
*6. Identify units of measurement.
*7. Identify graduations on a standard rule.
*8. Demonstrate the ability to read a ruler.
9. Design a construction project.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations and laboratory practice

Activities:

1. Students will be assigned to bring construction materials to class.
2. Students will measure and/or cut stock to specifications.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Exploring Production, Wright/Henak, Goodheart-Wilcox Co., Inc.

Exploring Construction, Henak, Richard M., Goodheart-Wilcox Co., Inc.

Technology For Tomorrow, Williams/Bradshaw/Daggett, South-Western Publishing Co., 1985.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will define terms that relate to project planning.
Objective 2: The student will list and discuss three components of a construction system model.
Objective 3: The student will correctly identify six steps in the construction process.
*Objective 4: The student will identify various construction materials and their uses.
*Objective 5: The student will identify types of constructions.
*Objective 6: The student will identify the units of measurements.
*Objective 7: The student will identify graduations on a standard rule.
*Objective 8: The student will correctly measure different lines or objects.
Objective 9: The student will design a construction project (bridge, house, tower).

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Defined terms related to project planning.
____2. Listed components of a construction system model.
____3. Listed the steps in the construction process.
____*4. Identified various construction materials and uses.
____*5. Identified types of constructions.
____*6. Identified units of measurement.
____*7. Identified graduations on a standard rule.
____*8. Demonstrated the ability to read a ruler.
____9. Designed a construction project.

* Indicates core/essential objectives

Course: Technology Education II: Construction Technology Cluster
(7th, 8th, 9th Grades, 4 1/2 weeks of instruction)

Unit 4: Building the Structure

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Define terms related to building a structure.
*2. List factors to be considered in clearing a construction site.
*3. List methods used to clear a site.
4. Describe methods used in framing a structure.
*5. Identify types of concrete footings and foundations.
*6. Identify tools and equipment used in general construction.
*7. List precautions to follow in the care of tools.
*8. Identify construction safety rules.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations and laboratory practice
Presentation (visiting speaker)

Activities:

1. Students will prepare a site using a constructed site box.
2. Students will build a concrete form.
3. Each student will prepare a safety poster.
4. Students should construct a model.
5. Design, build, and stress test a teacher approved project.
6. Pneumatic Structures Activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Exploring Construction, Henak, Richard M., Goodheart-Wilcox Co., Inc.

Resource people from the community

Exploring Production, Wright/Henak, Goodheart-Wilcox Co., Inc.

Evaluation and Suggested Minimum Performance Standards:

Note: Objectives to be performed at 70% accuracy.

*Objective 1: The student will define terms related to building a structure.
*Objective 2: The student will list seven factors to be considered in clearing a construction site.
*Objective 3: The student will list and discuss five methods to clear a site.
Objective 4: The student will match twelve terms that relate to framing a structure to their correct definitions.
*Objective 5: The student will identify three types of footings.
*Objective 6: The student will identify tools and equipment used in general construction.
*Objective 7: The student will list precautions to follow in the care of tools.
*Objective 8: The student will identify construction safety rules.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Defined terms related to building a structure.
____*2. Listed factors to be considered when clearing a construction site.
____*3. Listed methods used to clear a site.
____4. Described methods used in framing a structure.
____*5. Identified types of concrete footings and foundations.
____*6. Identified tools and equipment used in general construction.
____*7. Listed precautions to follow in the care of tools.
____*8. Identified construction safety rules.

* Indicates core/essential objectives

Course: Technology Education II: Construction Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 5: Finishing the Structure

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Define terms related to finishing a project.
2. Discuss climate control processes.
3. List the different types of solar systems.
*4. List the purposes of the plumbing system.
*5. List the two major uses of electrical systems.
*6. List the three phases of finishing a project.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations and laboratory practices
Presentation (visiting speaker)

Activities:

1. Construct a project which will explain how a heating system works. (See NOTE below or Dr. Kenneth Simmons).
2. Collect samples of materials needed to finish a structure.
3. Construct a simple solar project.
4. Finish-out the previously constructed model.

NOTE: Contact Dr. Kenneth Simmons for details about this activity. He can be reached at the following address:

Dr. Kenneth Simmons, Professor
Industrial Technology
Department of Industrial Technology
Alcorn State University
Lorman, MS 39096

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Exploring Construction, Henak, Richard M., Goodheart-Wilcox Co., Inc.

Resource people from the community

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will define terms that relate to finishing a project.
Objective 2: The student will list three types of climate control processes and match these processes with the correct definitions.
Objective 3: The student will list two types of solar systems and match these systems with the correct definitions.
*Objective 4: The student will list two reasons why the plumbing system is important.
*Objective 5: The student will list two uses of the electrical system.
*Objective 6: The student will list three phases of finishing and discuss each phase of finishing.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Defined terms relating to finishing a product.
____2. Discussed climate control processes.
____3. Listed the different types of solar systems.
____*4. Listed the purposes of the plumbing system.
____*5. Listed two major uses of electrical systems.
____*6. Listed the three phases of finishing a project.

* Indicates core/essential objectives

Course: Technology Education II: Construction Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 6: Occupational and Career Opportunity

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Describe jobs in the construction field and their requirements.
2. List educational programs related to construction.
*3. List ways of entering a construction trade.
*4. Distinguish between management and labor, discussing the function of each.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Guest speakers

Activities:

Simulate a labor management negotiation.
Research a construction career.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Exploring Production, Wright/Henak, Goodheart-Wilcox Co.

Local Labor Unions, Management

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will describe five jobs in the construction field.
Objective 2: The student will list educational programs related to construction.
*Objective 3: The student will list three ways of entering a construction trade.

*Objective 4: The student will discuss the functions of labor and management.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Described jobs in the construction field and their requirements.
____2. Listed educational programs related to construction.
____*3. Listed ways of entering a construction trade.
____*4. Distinguished between management and labor, discussing the function of each.

* Indicates core/essential objectives

Course: Technology Education II: Communication Technology Cluster
(7th Grade, 1 1/2 weeks of instruction)

Unit 1: Introduction to Communication Technology

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Discuss the impact of communication on society.
2. List the major developments in the history of communication.
3. List areas of advanced technology used in the area of communication.
*4. Classify careers in visual communication.
*5. Classify careers in audiovisual communication.
*6. Identify steps in the communication process.
*7. Distinguish between the types of communication.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Audio-visual materials
Handout sheets
Guest speakers

Activities:

1. Students will write a one-page report on Communication Technology. Objectives 1, 2, and 3 will be included in the report.
2. Career reports will be assigned to students for Objectives 4 and 5. Each student will be given 2 - 5 minutes to speak.
3. Guest speaker
4. Telegraph; string and can phone

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Seymour, D. Richard, Ritz, M. John, and Cloghessy, A. Florence, Exploring Communications, Goodheart-Wilcox Company, Inc.

Discovering Technology Communication, Jones and Robb, Harcourt-Brace Jovanovich, Publishers.

Speech department

Library

Students visit someone in field.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will demonstrate his or her understanding of the impact of communication on society by writing a one page report.

Objective 2: The student will list four of the major developments in the history of communication.

Objective 3: The student will list five areas of advanced technology in the area of communication.

*Objective 4: The student will list and identify five careers in the area of visual communication.

*Objective 5: The student will list and identify five careers in the area of audiovisual communication.

*Objective 6: The student will list and explain the four steps in a communication system.

*Objective 7: The student will explain the difference between the three types of communication system.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Discussed the impact of communication on society.
____2. Listed the major developments in the history of communications.
____3. Listed areas of advanced technology used in the area of communication.
____*4. Classified careers in visual communications.
____*5. Classified careers in audiovisual communications.
____*6. Identified steps in the communication process.
____*7. Distinguished between the types of communication.

* Indicates core/essential objectives

Course: Technology Education II: Communication Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 2: Sketching and Measurement

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Sketch the basic forms that make up an object.
2. Identify major components of linear metric measurement.
*3. Identify major components of linear English measurements.
*4. Read units of measurement in the English and metric system.
5. Measure given lines using the 1/8, 1/4, 1/2, 3/8, and 1 inch scales using an architect's scale.
*6. Measure given lines using centimeter and millimeter scales.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Handouts

Activities:

1. Students will sketch the basic forms from handouts.
2. Measure geometric figures in the English and metric systems.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Modern General Shop, Goodheart-Wilcox Company, Inc.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will sketch circles, squares, and triangles.
Objective 2: The student will identify millimeters, centimeters, and meters and convert from one unit to the other units.
*Objective 3: The student will identify feet, inches, and fractional parts of an inch and convert fractional units.
*Objective 4: The student will measure with all units on a standard twelve-inch rule.

Objective 5: The student will measure given lines using the 1/8, 1/4, 1/2, 3/8, and 1 inch scales on the architect's scale.

*Objective 6: The student will measure given lines using centimeter and millimeter scales.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Sketched the basic forms that make up an object.
____2. Identified major components of linear metric measurement.
____*3. Identified major components of linear English measurements.
____*4. Read units of measurement in the English and metric systems.
____5. Measured given lines using 1/8, 1/4, 1/2, 3/8, and 1 inch scales on the architect's scale.
____*6. Measured given lines using centimeter and millimeter scales.

* Indicates core/essential objectives

Course: Technology Education II: Communication Technology Cluster
(8th, 9th Grades, 4 1/2 weeks of instruction)

Unit 3: Orthographic and Isometric Drawings

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Identify basic drafting tools and equipment.
*2. Identify the alphabet of lines.
*3. Draw an orthographic projection from a pictorial view.
*4. Dimension an orthographic projection.
5. Draw a simple isometric view.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion

Activities:

1. Teacher demonstration and discussion of each drafting tool.
2. Draw geometric figures using the English and metric systems of measurement as prescribed by instructor.
3. Construct a model from the drawing done previously.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Modern General Shop, Goodheart-Wilcox Company, Inc.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will identify the following tools: Drawing board, T-Square, compass, 30-60 degree and 45 degree triangles, and the architect's scale.
*Objective 2: The student will list and describe the following lines: Border, object, center, hidden, dimension, extension, and section lines from a drawing.
*Objective 3: The student will draw a three-view orthographic projection from a dimensional pictorial view.
*Objective 4: The student will correctly place dimensions on the three-view drawing.

Objective 5: The student will construct a simple isometric drawing with the 30-60 degree triangle.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Identified basic drafting tools and equipment.
____*2. Identified the alphabet of lines.
____*3. Drew an orthographic projection from a pictorial view.
____*4. Dimensioned an orthographic projection.
____5. Drew a simple isometric drawing.

* Indicates core/essential objectives

Course: Technology Education II: Communication Technology Cluster
(7th, 8th, 9th Grades, 1 week of instruction)

Unit 4: Computer Utilization and CAD

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Distinguish basic computer hardware and identify input-output devices.
*2. Identify key words associated with CAD.
3. Conduct research with CAD applications.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and demonstrations

Activities:

1. Teacher demonstration and discussion using a CAD system.
2. Teacher demonstration and discussion using handouts and study sheets to run and load programs.
3. Students will copy diskette using Disk Copy Command to blank handouts.
4. The student will code a simple program in the basic language and output the program to the printer.
5. The student will draw a simple one-view drawing on the screen.
6. The student will draw a three-view drawing on the screen.
7. The student will dimension the three-view drawing.
8. The student will plot or print the drawing.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Computer Skills (Basic Vocational Skills) Research and Curriculum Unit - (Mississippi State University)

Seymour, Ritz, and Cloghessy, Exploring Communications, Goodheart-Wilcox Company, Inc.

CAD DRAW, Hearlitz and Company.

CAD Handouts

Drafting/CAD Magazines

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will identify a disk drive, keyboard, monitor, and printer.
*Objective 2: The student will identify the following key words: Load, run, save, and list.
Objective 3: The student will demonstrate understanding of CAD by researching the topic and making a presentation.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Distinguished basic computer hardware and identified input-output devices.
____*2. Identified key words associated with CAD.
____3. Conducted research with CAD applications.

* Indicates core/essential objectives

Course: Technology Education II: Communication Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 5: Electronic Communication

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Identify the major areas of electronic communication systems.
2. Discuss the historical developments of electronic communication.
3. Discuss recent developments in electronic communication.
*4. List key words related to electronic communication.
*5. Identify the different telecommunication systems.
*6. Design a communication system model.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and demonstrations

Activities:

1. Small group competition in which students will identify major areas of electronic communication systems by using a time line continuum.
2. Filmstrip (Southern Bell Films)
3. Students will identify key words related to electronic communication by using a)aword search handout (Band matching appropriate words to definitions.
4. Students will play the roles of each component or major area of a telephone. (Class demonstration)
5. Students will label each component of a telephone.
6. Students will identify parts and describe the system of a solar dish. (Build a small scale solar dish.)
7. Light wave communications activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Seymour, Ritz, and Cloghessy, Exploring Communications, Goodheart-Wilcox Co., Inc.

Telecommunication Companies

Jones and Robb, Discovering Technology Communications, Harcourt-Brace, Publishers.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will identify the major areas of electronic communication systems.
Objective 2: The student will discuss four historical developments that have affected electronic communications.
Objective 3: The student will discuss recent developments in electronic communications.
*Objective 4: The student will list ten key words related to electronic communication.
*Objective 5: The student will identify the different telecommunication systems.
*Objective 6: The student will design a communication system using other students to simulate electronic components.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Identified the major areas of electronic communication systems.
____2. Discussed the historical developments of electronic communication.
____3. Discussed recent developments in electronic communication.
____*4. Listed key words related to electronic communication.
____*5. Identified the different telecommunication systems.
____*6. Designed a communication system model.

* Indicates core/essential objectives

Course: Technology Education II: Communication Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 6: Graphic Arts

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Describe the development of graphic communication methods.
*2. Identify the major types of printing techniques used in graphic communication.
3. Cite the uses of printing procedures in consumer and industrial products.
*4. List careers in graphic communications.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Demonstration

Activities:

1. Students will identify the time line of the development of graphic equipment and material. (Cave men to holograph)
2. Students will identify methods of printing used on various products, newspapers, signs, etc.
3. Field trip to newspaper company.
4. The student will make a simple design transfer using the flat surface of a cut potato and ink pod.
5. Students will silk screen an emblem design using a silk screen kit.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Seymour, Ritz, and Cloghessy, Exploring Communications, Goodheart-Wilcox Co., Inc.

Jones and Robb, Discovering Technology Communication, Harcourt Brace Publishing Co.

National Geographic

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will describe developments in communication methods.
*Objective 2: The student will identify the major types of printing techniques.
Objective 3: The student will cite the uses of printing procedures used in consumer and industrial products.
*Objective 4: The student will list four careers in the area of graphic communication.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Described the development of graphic communication methods.
____*2. Identified the major types of printing techniques used in graphic communication.
_____3. Cited the uses of printing procedures in consumer and industrial products.
____*4. Listed careers in graphic communication.

* Indicates core/essential objectives

Course: Technology Education II: Communication Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 7: Photography

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Identify the basic parts of a camera.
2. Describe the function of the aperture and shutter.
*3. Identify the basic types of cameras.
*4. List and describe the differences between the four types of camera lenses.
*5. Load film and shoot pictures with 35mm and instamatic cameras.

* Indicates core/essential objectives

Suggested Instructional Practices:

Demonstrations, viewing films, and video tapes

Activities:

1. Practice loading camera with exposed film.
2. Simulate or perform film processing.
3. Pin-hole camera activity.
4. Video production activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Jones and Robb, Discovering Technology Communications, Harcourt-Brace Jovanovich, Publishers.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will identify from a chart or picture the basic parts of a camera.
Objective 2: The student will write a paragraph describing the function of the camera aperture and shutter.
*Objective 3: The student will identify the four types of cameras using cameras or pictures.
*Objective 4: The student will list and describe the differences between the four camera lenses using models or pictures.

*Objective 5: The student will load film and make pictures with 35mm and instamatic cameras.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Identified the basic parts of a camera.
____2. Described the function of the aperture and shutter.
____*3. Identified the basic types of cameras.
____*4. Listed and described the differences between the four types of camera lenses.
____*5. Loaded film and shot pictures with 35mm and instamatic cameras.

* Indicates core/essential objectives

Course: Technology Education II: Communication Technology Cluster
(8th, 9th Grades, 3 weeks of instruction)

Unit 8: Career and Leadership Opportunities

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Research a career.
*2. Conduct a career interview.
*3. Complete a job application form.
*4. Interview for a job.
*5. Identify job-keeping skills from a list.
6. Write a technical report.
7. Conduct a business meeting using parliamentary procedures.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Audio-visual materials
Handout sheets
Class demonstrations

Activities:

1. Interview a worker in the occupation of student's choice.
2. Role playing interviews. Practice with other students. Prepare an audio/video tape for class.

Suggested Resources:

Primary: Research and Curriculum Unit, "Basic Vocational Education," 1987, Drawer DX, Mississippi State, MS 39762

Secondary: Occupational Outlook Handbook

Seymour, Ritz, and Cloghessy, Exploring Communications, Goodheart-Wilcox Co., Inc.

AIASA Competitive Events Guide

Teacher handout on the Competitive Events' guidelines with discussion. (AIASA Guidelines)

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will select one career and research the career using the Occupational Outlook Handbook as a guide.

*Objective 2: The student will conduct a career interview either in person or by phone using a teacher constructed checklist.

*Objective 3: The student will accurately complete a job application form.

*Objective 4: The student will successfully complete the job interview process.

*Objective 5: The student will match 75% of the job-keeping skills from a list.

Objective 6: The student will write a two-paragraph technical report using the Competitive Events Guide.

Objective 7: The student will conduct a business meeting using parliamentary procedures.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Researched a career.
____*2. Conducted a career interview.
____*3. Completed a job application form.
____*4. Interviewed for a job.
____*5. Identified job-keeping skills from a list.
_____6. Wrote a technical report.
_____7. Conducted a business meeting using parliamentary procedure.

* Indicates core/essential objectives

Course: Technology Education II: Transportation (Energy and Power) Cluster (7th, and 8th Grades, 1 1/2 weeks of instruction)

Unit 1: Introduction to Energy and Power Systems

Objective(s): Upon completion of this unit, the student should be able to do the following:

1. Define a fluid system.
*2. Define an electrical system.
*3. Define a mechanical system.
*4. Define an electronic system.
*5. List at least five sources of energy.
*6. List five general safety rules and practices.
7. List five ways a computer can be used in transportation technology.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations
Hands-on activities
Field trips
Job sheets
Test - pre-post

Activities:

1. Perform an activity using a laser to demonstrate various types of energy systems.
2. Distinguish between power and energy by demonstrating how energy and power are using research and experimentation techniques.
3. Write a short essay on the different forms of energy and discuss the advantages and disadvantages of each.
4. Exhibit safe working habits by demonstrating how to start and stop a small gas engine such as a Briggs & Stratton type.
5. Disassemble a mechanical device, study its principles of operation, and re-assemble it.
6. Demonstrate how electronic systems on small gas engines work.
7. List five sources of energy and present them illustrated on a poster.
8. Draw a poster which explains safety procedures to follow with selected power and energy systems.
9. Observe and listen to an Air Traffic Controller and write a report.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: General Industry Education and Technology, 7th Ed., Groveman and Fierer, McGraw-Hill, Publishers.

Resource Person

Related Transparencies

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will correctly define a fluid system.
*Objective 2: The student will correctly define an electrical system.
*Objective 3: The student will correctly define a mechanical system.
*Objective 4: The student will correctly define an electronic system.
*Objective 5: The student will list at least five of the sources of energy.
*Objective 6: The student will list five general safety rules or practices.
Objective 7: The student will list five ways a computer can be used in transportation technology.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____1. Defined a fluid system.
____*2. Defined an electrical system.
____*3. Defined a mechanical system.
____*4. Defined an electronic system.
____*5. Listed at least five sources of energy.
____*6. Listed five general safety rules and practices.
____7. Listed five ways a computer can be used in transportation technology.

* Indicates core/essential objectives

Course: Technology Education II: Transportation (Energy and Power) Cluster (7th, 8th Grades, 1 1/2 weeks of instruction)

Unit 2: Energy and Power Systems

Objective(s): Upon completion of this unit, the student should be able to do the following:

1. Describe the components of a fluid system and list five uses of a fluid system.
*2. Describe the components of a mechanical system and list five uses of a mechanical system.
*3. Describe the components of an electrical system and list five uses of an electrical system.
4. Describe the components of an electronic system and list five uses of an electronic system.
*5. Describe the components of a transportation system.
6. Define laser energy and list five uses of laser energy.
*7. Define nuclear energy and list five uses of nuclear energy.
*8. Define five natural energy sources and list five uses of natural energy sources.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations
Hands-on activities
Test - pre-post

Activities:

1. Construct a small manually operated fluid power system.
2. Assemble and disassemble a small simple gas engine.
3. Draw and read a schematic diagram of an electric circuit.
4. Construct a small electric motor.
5. Visit a nearby electric power generating plant and study its operation.
6. Design a project which has moving parts that are powered by a fluid system.
7. Demonstrate the use of pneumatics to move parts.
8. Laser activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: General Industry Education and Technology, 7th Ed., Groveman and Fierer, McGraw-Hill, Publishers.

Resource person

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will describe the components of a fluid system and list five uses of a fluid system.

*Objective 2: The student will describe the components of a mechanical system and list five uses of a mechanical system.

*Objective 3: The student will describe the components of an electrical system and list five uses of an electrical system.

Objective 4: The student will describe the components of an electronic system and list five uses of an electronic system.

*Objective 5: The student will describe the components of the transportation system.

Objective 6: The student will correctly define laser energy and list five uses of laser energy.

*Objective 7: The student will correctly define nuclear energy and list five uses of nuclear energy.

*Objective 8: The student will correctly define five natural energy sources and list five uses of natural energy sources.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____1. Described the components of a fluid system and listed five uses of a fluid system.

____*2. Described the components of a mechanical system and listed five uses of a mechanical system.

____*3. Described the components of an electrical system and listed five uses of an electrical system.

____4. Described the components of an electronic system and listed five uses of an electronic system.

____*5. Described the components of a transportation system.

____6. Defined laser energy and listed five uses of laser energy.

___*7. Defined nuclear energy and listed five uses of nuclear energy.

___*8. Defined five natural energy sources and listed five uses of natural energy sources.

* Indicates core/essential objectives

Course: Technology Education II: Transportation (Energy and Power) Cluster (8th, 9th Grades, 3 weeks of instruction)

Unit 3: Engines

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Describe the difference between internal and external engines.
*2. List five types of engines used today.
3. List five different uses of each type of engine.
4. List ten different tools used in the assembly and disassembly of engines.
*5. List six major parts of the two-cycle engine.
*6. List six major parts of the four-cycle engine.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Test - pre-post
Objective sheets
Reteach

Activities:

1. Prepare a chart on how one of the following combustion engines works: (a) automobile, (b) diesel, (c) jet engine, (d) rocket engine, (e) gas turbine engine, and (f) rotating combustion engine.
2. When presented with an illustration (flash cards) or physical part of (a) air cleaner, (b) head, (c) spark plug, (d) fly wheel, (e) valves, (f) cam shaft, (g) piston, (h) cylinder, (i) fuel tank, (j) fuel pump, (k) block, (l) carburetor, (m) oil pump, (n) crank shaft, (o) connecting rod, and (p) piston rings, correctly identify them and explain their operation and function.
3. Demonstrate the principle of action and re-action using a balloon, a length of fine wire or fishing line, masking tape, and a plastic straw. Blow up the balloon and place a clamping device (clothespin) over its end. Using masking tape, attach the straw evenly across the top of the balloon. Thread the wire/line through the straw and connect it opposite ends of a room. Then, release the clamp. Explain the balloon's actions relative to a jet engine's operations.
4. Construct a Metric 500 model.

5. Break down a two or four cycle engine; name and explain the function of each part.
6. Close the adjusting screw, shutting off the gas coming into the carburetor. Explain what happened to the engine and why it happened. Now, open the adjusting screw. Explain what happens and why it happens.
7. Model Rocketry Activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Purvis, Jud, "All About Small Gas Engines, How to Fix All Kinds of 2-cycle and 4-cycle Engines," 1960, The Goodheart-Wilcox Company, Inc.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will describe the difference between internal and external engines.
*Objective 2: The student will list five types of engines used today.
Objective 3: The student will list five different uses of each type of engine.
Objective 4: The student will list ten different tools used in the assembly and disassembly of engines.
*Objective 5: The student will list six major parts of the two-cycle engine.
*Objective 6: The student will list six major parts of the four-cycle engine.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

___*1. Described the difference between internal and external engines.
___*2. Listed five types of engines used today.
___3. Listed five different uses of each type of engine.
___4. Listed ten different tools used in the assembly and disassembly of engines.
___*5. Listed six major parts of the two-cycle engine.
___*6. Listed six major parts of the four-cycle engine.

* Indicates core/essential objectives

Course: Technology Education II: Transportation (Energy and Power) Cluster (7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 4: Impacts of Energy/Power/Transportation

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. List five steps in the conservation of expendable natural resources.
*2. Define pollution.
*3. List five harmful effects of pollution.
4. List five sources of pollution.
5. Explain five social concerns relative to energy, power, and transportation.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Test - pre-post
Hands-on activities
Objective sheets
Reteach/Retest

Activities:

1. Construct a poster describing different forms of pollution.
2. Write a report to accompany the poster which further explains the various forms pollution takes.
3. Identify local sources of pollution.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: A-V Materials

Resource person

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will list five steps in the conservation of expendable natural resources.
*Objective 2: The student will define pollution.

*Objective 3: The student will list five harmful effects of pollution.
Objective 4: The student will list five sources of pollution.
Objective 5: The student will explain five social concerns relative to energy, power, and transportation.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Listed five steps in conservation of expendable natural resources.
____*2. Defined pollution.
____*3. Listed five harmful effects of pollution.
____4. Listed five sources of pollution.
____5. Explained five social concerns relative to energy, power, and transportation.

* Indicates core/essential objectives

Course: Technology Education II: Transportation (Energy and Power) Cluster (7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 5: Career and Leadership Opportunities

Objective(s): Upon completion of this unit, the student should be able to do the following:

1. Describe careers that are available in power and energy industries.
*2. Define free enterprise.
*3. Define entrepreneurship.
4. Define professional careers.
*5. Define skilled labor.
*6. Define semi-skilled labor.
*7. Define unskilled labor.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Test - pre-post
Reteach/Retest

Activities:

1. View filmstrips in which people describe their jobs.
2. Complete job applications.
3. Participate in a "mock" job interview conducted by a local employer.
4. Role playing in employer/employee situations. This should include deciding why to fire or hire situations.
5. Boat Hull Design.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: D. McCrory, K. Todd, R. Todd, "Understanding and Using Technology," 1985, Davis Publications, Inc. Worchester, MA.

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will list eight careers in both power and energy industries.
*Objective 2: The student will define free enterprise.
*Objective 3: The student will define entrepreneurship.
Objective 4: The student will define professional careers.
*Objective 5: The student will define skilled labor.
*Objective 6: The student will define semi-skilled labor.
*Objective 7: The student will define unskilled labor.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

_____1. Described careers that are available in both power and energy industries.
____*2. Defined free enterprise.
____*3. Defined entrepreneurship.
_____4. Defined professional careers.
____*5. Defined skilled labor.
____*6. Defined semi-skilled labor.
____*7. Defined unskilled labor.

* Indicates core/essential objectives

Standardized Curriculum For

Technology Education III

Mississippi Department of Education
Bureau of
Vocational, Technical
and Adult Education

CE054419

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STANDARDIZED CURRICULA

FOR

TECHNOLOGY EDUCATION III PROGRAMS

MISSISSIPPI DEPARTMENT OF EDUCATION

OFFICE OF VOCATIONAL, TECHNICAL,

AND ADULT EDUCATION

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Direct inquiries to:

Lynn Basham, State Supervisor
Technology Education Programs
Office of Vocational, Technical, and Adult Education
Box 771
Jackson, Mississippi 39205
Phone: (601) 359-3941

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TECHNOLOGY EDUCATION III

Manufacturing Technology Cluster

- Unit 1: Introduction to Manufacturing Technology
- Unit 2: Types of Manufacturing Systems
- Unit 3: Manufacturing Materials and Evaluation
- Unit 4: Manufacturing and Marketing
- Unit 5: Careers in Manufacturing
- Unit 6: Manufacturing Processes

Construction Technology Cluster

- Unit 1: Introduction to Construction
- Unit 2: Contracting
- Unit 3: Design and Planning
- Unit 4: Building the Structure
- Unit 5: Finishing the Structure
- Unit 6: Occupational and Career Opportunity

Communication Technology Cluster

- Unit 1: Introduction to Communication Technology
- Unit 2: Sketching and Measurement
- Unit 3: Orthographic and Isometric Drawings
- Unit 4: Computer Utilization and CAD
- Unit 5: Electronic Communication
- Unit 6: Graphic Arts
- Unit 7: Photography

Transportation (Energy and Power) Cluster

- Unit 1: Introduction to Energy and Power Systems
- Unit 2: Energy and Power Systems
- Unit 3: Engines
- Unit 4: Impacts of Energy/Power/Transportation
- Unit 5: Career and Leadership Opportunities

Course: Technology Education III: Manufacturing Technology Cluster (7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 1: Introduction to Manufacturing Technology

Objective(s): Upon completion of this unit, the student should be able to do the following:

1. Identify the components of a manufacturing system according to the universal system model.
*2. Identify the areas of a manufacturing organization and the correct function of each area.
*3. Identify job titles and tasks in the different divisions of manufacturing.
*4. Discuss general industrial and laboratory safety rules and explain the purpose of each rule.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Group Exercise "A Manufacturing Company, Its Structure, and Its Components"
2. Industrial Park Operations: Establish an industrial park which includes several companies, an airport, waterways, utilities, roads, railroads, etc. Include a city layout and plans for future expansions. Use materials such as boxes and tape to construct the model.
3. Instead of No. 2 above, set up a company model showing the typical divisions: office, plant, parts and maintenance, etc.
4. Locate manufacturing on a time line.
5. "Label" each student with a component of manufacturing. Then, send each student to the correct area set aside for part of the universal system model and allow them to explain why they are there. Use signs, hats, or something similar for labels.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987.

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

AIASA Competitive Events Guide

Visual Aids

Mississippi R & D Center, Jackson

Evaluation and Suggested Minimum Performance Standards:

Note: Each objective will be performed at 70% accuracy.

Objective 1: The student will identify the four components of manufacturing as they relate to the universal system model.

*Objective 2: The student will match the areas of manufacturing to their correct functions.

*Objective 3: The student will identify job titles and job tasks found in manufacturing divisions.

*Objective 4: The student will score 70% on a general safety rules test.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____1. Identified the components of a manufacturing system according to the universal system model.

___*2. Identified the areas of a manufacturing organization and the correct function of each area.

___*3. Identified job titles and tasks in different divisions of manufacturing.

___*4. Discussed general industrial and laboratory safety rules and explained the purpose of each rule.

* Indicates core/essential objectives

Course: Technology Education III: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 2: Types of Manufacturing Systems

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Match the terms related to manufacturing systems with the correct definitions.
*2. Distinguish between the types of manufacturing systems.
*3. Determine the characteristics of free enterprise.
4. List the main components of a manufacturing enterprise.
*5. State the functions of management of a manufacturing enterprise.
*6. Identify the forms of ownership of manufacturing enterprises.
*7. Complete statements concerning the importance of the different forms of ownership in the United States.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Set up examples of the three types of company ownership using students to represent each. Consider using resource persons who represent each type of ownership.
2. Draw an organizational chart for a company.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education." 1987.

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

AIASA Competitive Events Guide

Evaluation and Suggested Minimum Performance Standards:

NOTE: Each objective will be performed at 70% accuracy.

*Objective 1: The student will match designated terms related to manufacturing with correct definitions.
*Objective 2: The student will distinguish between the three types of manufacturing systems.
*Objective 3: The student will select from a list the characteristics of free enterprise.
Objective 4: The student will list the five components of manufacturing enterprises.
*Objective 5: The student will list the five functions of a manufacturing enterprise.
*Objective 6: The student will identify the three forms of manufacturing enterprise ownerships.
*Objective 7: The student will complete three statements concerning the importance of ownership in the United States.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Matched terms related to manufacturing systems with the correct definitions.
____*2. Distinguished between the types of manufacturing systems.
____*3. Determined the characteristics of free enterprise.
____ 4. Listed the main components of a manufacturing enterprise.
____*5. Stated the functions of management of a manufacturing enterprise.
____*6. Identified the forms of ownership of manufacturing enterprises.
____*7. Completed statements concerning the importance of different forms of ownership in the United States.

* Indicates core/essential objectives

Course: Technology Education III: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 3: Manufacturing Materials and Evaluation

Objective(s): Upon completion of this unit, the student should be able to do the following:

1. Identify general properties of materials and the correct descriptions of these general properties.
*2. List the factors to be considered when choosing materials.
*3. Identify the terms that apply to the purchase of designated materials.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Locate and present different types of manufacturing materials to the class.
2. Field Trip
3. Film or Videotape
4. Construct posters on selected types of manufacturing materials.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education." 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

Team Leader's Handbook for Vocational Curricula

Evaluation and Suggested Minimum Performance Standards:

NOTE: Each objective will be performed at 70% accuracy.

Objective 1: The student will identify general properties of materials with the correct descriptions.
*Objective 2: The student will list the five factors to be considered when choosing materials.
*Objective 3: The student will identify the terms that apply to the purchasing of designated materials.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____1. Identified general properties of materials and the correct descriptions of these general properties.
___*2. Listed the factors to be considered when choosing materials.
___*3. Identified the terms that apply to the purchase of designated materials.

* Indicates core/essential objectives

Course: Technology Education III: Manufacturing Technology Cluster (7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 4: Manufacturing and Marketing

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Match terms related to process planning with the correct definitions.
2. Complete statements describing the production activities that occur within a company.
*3. List the four major steps that occur during the production phase of a manufacturing operation.
*4. Identify the functions of marketing with the correct definitions.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Product Research and Selection (See Unit 6)
2. Design a flow chart for product selected.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364.

Secondary: Team Leader's Handbook for Standardizing Vocational Curricula

Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

Simulations, games, and related activities

Evaluation and Suggested Minimum Performance Standards:

Note: Objectives will be performed at 70% accuracy.

*Objective 1: The student will match terms related to process planning to the correct definitions.

Objective 2: The student will complete statements describing the production activities that occur within a company.

*Objective 3: The student will list the four major steps that occur during the production phase of a manufacturing operation.

*Objective 4: The student will identify the functions of marketing to the correct definitions with 70% accuracy.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Matched terms related to process planning with the correct definitions.

____2. Completed statements describing the production activities that occur within a company.

____*3. Listed the four major steps that occur during the production phase of a manufacturing operation.

____*4. Identified the functions of marketing with the correct definitions.

* Indicates core/essential objectives

Course: Technology Education III: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 5: Careers in Manufacturing

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. List types of information needed to select a job.
*2. List types of personal information helpful in choosing a job.
*3. Describe how to match personal goals with job requirements.
*4. List the resources one will have to work with on job.

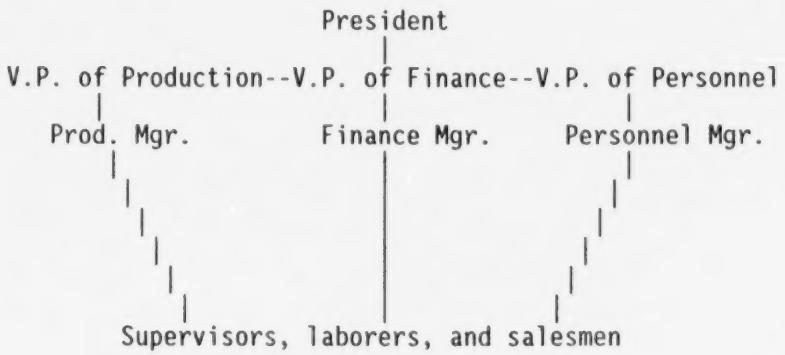
* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Role playing
2. Job Search and Related Interviewing Techniques
3. Use an Organizational Chart to allow students to interview for jobs listed on the chart. (See sample below.)



Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364.

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

Employment agency

Dictionary of Occupational Titles (DOT)

Armed Services; National Guard

Guidance Counselor

Evaluation and Suggested Minimum Performance Standards:

NOTE: Objectives to be performed at 70% accuracy.

*Objective 1: The student will list the three types of information needed in selecting a job.
*Objective 2: The student will list two types of personal information helpful in choosing a job.
*Objective 3: The student will describe at least three personal goals and match them with job requirements.
*Objective 4: The student will list the three resources one will have to work with on a job.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Listed types of information needed to select a job.
____*2. Listed types of personal information helpful in choosing a job.
____*3. Described how to match personal goals with job requirements.
____*4. Listed the resources one will have to work with on a job.

* Indicates core/essential objectives

Course: Technology Education III: Manufacturing Technology Cluster
(7th, 8th, 9th Grades, 4 1/2 weeks of instruction)

Unit 6: Manufacturing Processes

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Classify operations as pre-processing, processing, or post-processing.
2. Distinguish between primary and secondary manufacturing processes.
*3. Identify the three major types of maintenance in manufacturing.
*4. Select true statements concerning general safety rules.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Industry demonstrations

Activities:

1. Student(s) will set up manufacturing operation to make a product or products.
   Example: Assembly-line process
2. Robotic Info Activity
3. Yo Yo Production Activity
4. Sprong Pong Activity

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Wright, R. Thomas, Exploring Manufacturing, South Holland, Ill. The Goodheart-Wilcox Company, 1985.

Simulations, Games, and Related Activities

Evaluation of Suggested Minimum Performance Standards:

Note: Objectives to be performed at 70% accuracy.

*Objective 1: The student will list the three classifications of processing.
Objective 2: The student will distinguish between primary and secondary manufacturing processes.
*Objective 3: The student will identify the three major types of maintenance in manufacturing.
*Objective 4: The student will select from a given list all safety rules concerning general safety manufacturing processes.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Classified operations as pre-processing, processing, or post-processing.
_____2. Distinguished between primary and secondary manufacturing processes.
____*3. Identified the three major types of maintenance in manufacturing.
____*4. Selected true statements concerning general safety rules.

* Indicates core/essential objectives

Course: Technology Education III: Construction Technology Cluster
(7th Grade, 1 1/2 weeks of instruction)

Unit 1: Introduction to Construction

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Define construction technology.
2. List statements concerning how construction technology affects society.
3. List statements concerning the types of construction.
*4. Distinguish between construction technology careers.
*5. Identify the major types of construction in the community.
*6. Research a construction technology career.
*7. Sketch a floor plan of a house.
*8. List construction careers involved in building a house.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations and laboratory practice
Presentation (visiting speaker)

Activities:

1. Make and label a scrapbook on various construction projects.
2. Field trips
3. Classroom discussion on the economic, social, and/or ecological effects of construction on society.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education, 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364.

Secondary: Exploring Construction, Henak, Richard M., Goodheart-Wilcox Co., Inc. Oklahoma (Unit 1)

Exploring Production, Wright/Henak

Production Technology, Feirer, John W. and Lindfeds, John R.

Construction (employers/employees)

School Shop and other magazines

Evaluation and Suggested Minimum Performance Standards:

NOTE: Objectives to be performed at 70% accuracy.

*Objective 1: The student will define construction technology.
Objective 2: The student will list statements concerning how construction technology affects society.
Objective 3: The student will list statements concerning the types of construction by providing the correct words.
*Objective 4: The student will match careers with correct definitions.
*Objective 5: The student will list three types of construction and materials used in each.
*Objective 6: The student will list three construction careers and state required training, working conditions, and future possibilities of employment.
*Objective 7: The student will sketch a floor plan of a house.
*Objective 8: The student will list construction careers involved in building a house.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Defined construction techology.
____2. Listed statements concerning how construction technology affects society.
____3. Listed statements concerning the types of construction.
____*4. Distinguished between construction technology careers.
____*5. Identified the major types of construction in the community.
____*6. Researched a construction technology career.
____*7. Sketched a floor plan of a house.
____*8. Listed construction careers involved in building a house.

* Indicates core/essential objectives

Course: Technology Education III: Construction Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 2: Contracting

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. List and discuss the types of contractors.
*2. Define contract.
*3. List the kinds of contracts.
*4. Define estimate.
5. List the factors in determining an estimate.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Presentation (visiting resource person)

Activities:

Each student will develop a contract according to teacher's instruction.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Local contractor
Local attorney

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will list and discuss three kinds of contractors.
*Objective 2: The student will define the term "contract."
*Objective 3: The student will list the three kinds of contracts.
*Objective 4: The student will define the term "estimate."
Objective 5: The student will list five factors in determining an estimate.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Listed and discussed the types of contractors.
____*2. Defined contract.
____*3. Listed the kinds of contracts.
____*4. Defined estimate.
____5. Listed the factors in determining an estimate.

* Indicates core/essential objectives

Course: Technology Education III: Construction Technology Cluster
(8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 3: Design and Planning

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Define terms related to project planning.
*2. List components of a construction system model.
3. List the steps in the construction process.
*4. Identify construction materials and uses.
*5. Identify types of constructions.
*6. Identify units of measurement.
*7. Identify graduations on a standard rule.
*8. Demonstrate the ability to read a ruler.
9. Design a construction project.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations and laboratory practice

Activities:

1. Students will be assigned to bring construction materials to class.
2. Students will measure and/or cut stock to specifications.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Exploring Production, Wright/Henak, Goodheart-Wilcox Co., Inc.

Exploring Construction, Henak, Richard M., Goodheart-Wilcox Co., Inc.

Technology For Tomorrow, Williams/Bradshaw/Daggett, South-Western Publishing Co., 1985.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will define terms that relate to project planning.
*Objective 2: The student will list and discuss three components of a construction system model.
Objective 3: The student will correctly identify six steps in the construction process.
*Objective 4: The student will identify various construction materials and their uses.
*Objective 5: The student will identify types of constructions.
*Objective 6: The student will identify the units of measurements.
*Objective 7: The student will identify graduations on a standard rule.
*Objective 8: The student will correctly measure different lines or objects.
Objective 9: The student will design a construction project (bridge, house, tower).

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Defined terms related to project planning.
____*2. Listed components of a construction system model.
____3. Listed the steps in the construction process.
____*4. Identified various construction materials and uses.
____*5. Identified types of constructions.
____*6. Identified units of measurement.
____*7. Identified graduations on a standard rule.
____*8. Demonstrated the ability to read a ruler.
____9. Designed a construction project.

* Indicates core/essential objectives

Course: Technology Education III: Construction Technology Cluster
(7th, 8th, 9th Grades, 4 1/2 weeks of instruction)

Unit 4: Building the Structure

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Define terms related to building a structure.
*2. List factors to be considered in clearing a construction site.
*3. List methods used to clear a site.
4. Describe methods used in framing a structure.
5. Identify types of concrete footings and foundations.
*6. Identify tools and equipment used in general construction.
*7. List precautions to follow in the care of tools.
*8. Identify construction safety rules.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations and laboratory practice
Presentation (visiting speaker)

Activities:

1. Students will prepare a site using a constructed site box.
2. Students will build a concrete form.
3. Each student will prepare a safety poster.
4. Students should construct a model.
5. Design, build, and stress test a teacher approved project.
6. Pneumatic Structures Activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Exploring Construction, Henak, Richard M., Goodheart-Wilcox Co., Inc.

Resource people from the community

Exploring Production, Wright/Henak, Goodheart-Wilcox Co., Inc.

Evaluation and Suggested Minimum Performance Standards:

Note: Objectives to be performed at 70% accuracy.

*Objective 1: The student will define terms related to building a structure.
*Objective 2: The student will list seven factors to be considered in clearing a construction site.
*Objective 3: The student will list and discuss five methods to clear a site.
Objective 4: The student will match twelve terms that relate to framing a structure to their correct definitions.
Objective 5: The student will identify three types of footings.
*Objective 6: The student will identify tools and equipment used in general construction.
*Objective 7: The student will list precautions to follow in the care of tools.
*Objective 8: The student will identify construction safety rules.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Defined terms related to building a structure.
____*2. Listed factors to be considered when clearing a construction site.
____*3. Listed methods used to clear a site.
____4. Described methods used in framing a structure.
____5. Identified types of concrete footings and foundations.
____*6. Identified tools and equipment used in general construction.
____*7. Listed precautions to follow in the care of tools.
____*8. Identified construction safety rules.

* Indicates core/essential objectives

Course: Technology Education III: Construction Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 5: Finishing the Structure

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Define terms related to finishing a project.
2. Discuss climate control processes.
3. List the different types of solar systems.
*4. List the purposes of the plumbing system.
*5. List the two major uses of electrical systems.
*6. List the three phases of finishing a project.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations and laboratory practices
Presentation (visiting speaker)

Activities:

1. Construct a project which will explain how a heating system works. (See NOTE below or Dr. Kenneth Simmons).
2. Collect samples of materials needed to finish a structure.
3. Construct a simple solar project.
4. Finish-out the previously constructed model.

NOTE: Contact Dr. Kenneth Simmons for details about this activity. He can be reached at the following address:

Dr. Kenneth Simmons, Professor
Industrial Technology
Department of Industrial Technology
Alcorn State University
Lorman, MS 39096

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Exploring Construction, Henak, Richard M., Goodheart-Wilcox Co., Inc.

Resource people from the community

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will define terms that relate to finishing a project.
Objective 2: The student will list three types of climate control processes and match these processes with the correct definitions.
Objective 3: The student will list two types of solar systems and match these systems with the correct definitions.
*Objective 4: The student will list two reasons why the plumbing system is important.
*Objective 5: The student will list two uses of the electrical system.
*Objective 6: The student will list three phases of finishing and discuss each phase of finishing.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Defined terms relating to finishing a product.
____2. Discussed climate control processes.
____3. Listed the different types of solar systems.
____*4. Listed the purposes of the plumbing system.
____*5. Listed two major uses of electrical systems.
____*6. Listed the three phases of finishing a project.

* Indicates core/essential objectives

Course: Technology Education III: Construction Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 6: Occupational and Career Opportunity

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Describe jobs in the construction field and their requirements.
*2. List educational programs related to construction.
*3. List ways of entering a construction trade.
*4. Distinguish between management and labor, discussing the function of each.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Guest speakers

Activities:

Simulate a labor management negotiation.
Research a construction career.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Exploring Production, Wright/Henak, Goodheart-Wilcox Co.

Local Labor Unions, Management

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will describe five jobs in the construction field.
*Objective 2: The student will list educational programs related to construction.
*Objective 3: The student will list three ways of entering a construction trade.

*Objective 4: The student will discuss the functions of labor and management.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Described jobs in the construction field and their requirements.
____*2. Listed educational programs related to construction.
____*3. Listed ways of entering a construction trade.
____*4. Distinguished between management and labor, discussing the function of each.

* Indicates core/essential objectives

Course: Technology Education III: Communication Technology Cluster
(7th Grade, 1 1/2 weeks of instruction)

Unit 1: Introduction to Communication Technology

Objective(s): Upon completion of this unit, the student should be able to do the following:

1. List areas of advanced technology used in the area of communication.
*2. Classify careers in visual communication.
*3. Classify careers in audiovisual communication.
*4. Identify steps in the communication process.
*5. Distinguish between the types of communication.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Audio-visual materials
Handout sheets
Guest speakers

Activities:

1. Students will write a one-page report on Communication Technology. Objectives 1, 2, and 3 will be included in the report.
2. Career reports will be assigned to students for Objectives 4 and 5. Each student will be given 2 - 5 minutes to speak.
3. Guest speaker
4. Telegraph; string and can phone

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Seymour, D. Richard, Ritz, M. John, and Cloghessy, A. Florence, Exploring Communications, Goodheart-Wilcox Company, Inc.

Discovering Technology Communication, Jones and Robb, Harcourt-Brace Jovanovich, Publishers.
Speech department

Library

Students visit someone in field.

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will list five areas of advanced technology in the area of communication.
*Objective 2: The student will list and identify five careers in the area of visual communication.
*Objective 3: The student will list and identify five careers in the area of audiovisual communication.
*Objective 4: The student will list and explain the four steps in a communication system.
*Objective 5: The student will explain the difference between the three types of communication system.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

_____1. Listed areas of advanced technology used in the area of communication.
____*2. Classified careers in visual communications.
____*3. Classified careers in audiovisual communications.
____*4. Identified steps in the communication process.
____*5. Distinguished between the types of communication.

* Indicates core/essential objectives

Course: Technology Education III: Communication Technology Cluster (7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 2: Sketching and Measurement

Objective(s): Upon completion of this unit, the student should be able to do the following:

1. Identify major components of linear metric measurement.
*2. Identify major components of linear English measurements.
*3. Read units of measurement in the English and metric system.
*4. Measure given lines using the 1/8, 1/4, 1/2, 3/8, and 1 inch scales using an architect's scale.
*5. Measure given lines using centimeter and millimeter scales.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Handouts

Activities:

1. Students will sketch the basic forms from handouts.
2. Measure geometric figures in the English and metric systems.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Modern General Shop, Goodheart-Wilcox Company, Inc.

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will identify millimeters, centimeters, and meters and convert from one unit to the other units.
*Objective 2: The student will identify feet, inches, and fractional parts of an inch and convert fractional units.
*Objective 3: The student will measure with all units on a standard twelve-inch rule.
*Objective 4: The student will measure given lines using the 1/8, 1/4, 1/2, 3/8, and 1 inch scales on the architect's scale.

*Objective 5: The student will measure given lines using centimeter and millimeter scales.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____1. Identified major components of linear metric measurement.
____*2. Identified major components of linear English measurements.
____*3. Read units of measurement in the English and metric systems.
____*4. Measured given lines using 1/8, 1/4, 1/2, 3/8, and 1 inch scales on the architect's scale.
____*5. Measured given lines using centimeter and millimeter scales.

* Indicates core/essential objectives

Course: Technology Education III: Communication Technology Cluster
(8th, 9th Grades, 4 1/2 weeks of instruction)

Unit 3: Orthographic and Isometric Drawings

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Identify basic drafting tools and equipment.
*2. Identify the alphabet of lines.
*3. Draw an orthographic projection from a pictorial view.
*4. Dimension an orthographic projection.
5. Draw a simple isometric view.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion

Activities:

1. Teacher demonstration and discussion of each drafting tool.
2. Draw geometric figures using the English and metric systems of measurement as prescribed by instructor.
3. Construct a model from the drawing done previously.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Modern General Shop, Goodheart-Wilcox Company, Inc.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will identify the following tools: Drawing board, T-Square, compass, 30-60 degree and 45 degree triangles, and the architect's scale.
*Objective 2: The student will list and describe the following lines: Border, object, center, hidden, dimension, extension, and section lines from a drawing.
*Objective 3: The student will draw a three-view orthographic projection from a dimensional pictorial view.
*Objective 4: The student will correctly place dimensions on the three-view drawing.

Objective 5: The student will construct a simple isometric drawing with the 30-60 degree triangle.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Identified basic drafting tools and equipment.
____*2. Identified the alphabet of lines.
____*3. Drew an orthographic projection from a pictorial view.
____*4. Dimensioned an orthographic projection.
____5. Drew a simple isometric drawing.

* Indicates core/essential objectives

Course: Technology Education III: Communication Technology Cluster (7th, 8th, 9th Grades, 1 week of instruction)

Unit 4: Computer Utilization and CAD

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Distinguish basic computer hardware and identify input-output devices.
*2. Identify key words associated with CAD.
3. Conduct research with CAD applications.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and demonstrations

Activities:

1. Teacher demonstration and discussion using a CAD system.
2. Teacher demonstration and discussion using handouts and study sheets to run and load programs.
3. Students will copy diskette using Disk Copy Command to blank handouts.
4. The student will code a simple program in the basic language and output the program to the printer.
5. The student will draw a simple one-view drawing on the screen.
6. The student will draw a three-view drawing on the screen.
7. The student will dimension the three-view drawing.
8. The student will plot or print the drawing.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Computer Skills (Basic Vocational Skills) Research and Curriculum Unit - (Mississippi State University)

Seymour, Ritz, and Cloghessy, Exploring Communications, Goodheart-Wilcox Company, Inc.

CAD DRAW, Hearlitz and Company.

CAD Handouts

Drafting/CAD Magazines

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will identify a disk drive, keyboard, monitor, and printer.
*Objective 2: The student will identify the following key words: Load, run, save, and list.
Objective 3: The student will demonstrate understanding of CAD by researching the topic and making a presentation.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Distinguished basic computer hardware and identified input-output devices.
____*2. Identified key words associated with CAD.
____3. Conducted research with CAD applications.

* Indicates core/essential objectives

Course: Technology Education III: Communication Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 5: Electronic Communication

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Identify the major areas of electronic communication systems.
2. Discuss the historical developments of electronic communication.
3. Discuss recent developments in electronic communication.
*4. List key words related to electronic communication.
*5. Identify the different telecommunication systems.
*6. Design a communication system model.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and demonstrations

Activities:

1. Small group competition in which students will identify major areas of electronic communication systems by using a time line continuum.
2. Filmstrip (Southern Bell Films)
3. Students will identify key words related to electronic communication by using a)aword search handout (Band matching appropriate words to definitions.
4. Students will play the roles of each component or major area of a telephone. (Class demonstration)
5. Students will label each component of a telephone.
6. Students will identify parts and describe the system of a solar dish. (Build a small scale solar dish.)
7. Light wave communications activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Seymour, Ritz, and Cloghessy, Exploring Communications, Goodheart-Wilcox Co., Inc.

Telecommunication Companies

Jones and Robb, Discovering Technology Communications, Harcourt-Brace, Publishers.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will identify the major areas of electronic communication systems.
Objective 2: The student will discuss four historical developments that have affected electronic communications.
Objective 3: The student will discuss recent developments in electronic communications.
*Objective 4: The student will list ten key words related to electronic communication.
*Objective 5: The student will identify the different telecommunication systems.
*Objective 6: The student will design a communication system using other students to simulate electronic components.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

___*1. Identified the major areas of electronic communication systems.
___2. Discussed the historical developments of electronic communication.
___3. Discussed recent developments in electronic communication.
___*4. Listed key words related to electronic communication.
___*5. Identified the different telecommunication systems.
___*6. Designed a communication system model.

* Indicates core/essential objectives

Course: Technology Education III: Communication Technology Cluster
(7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 6: Graphic Arts

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Describe the development of graphic communication methods.
*2. Identify the major types of printing techniques used in graphic communication.
3. Cite the uses of printing procedures in consumer and industrial products.
*4. List careers in graphic communications.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussion
Demonstration

Activities:

1. Students will identify the time line of the development of graphic equipment and material. (Cave men to holograph)
2. Students will identify methods of printing used on various products, newspapers, signs, etc.
3. Field trip to newspaper company.
4. The student will make a simple design transfer using the flat surface of a cut potato and ink pod.
5. Students will silk screen an emblem design using a silk screen kit.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Seymour, Ritz, and Cloghessy, Exploring Communications, Goodheart-Wilcox Co., Inc.

Jones and Robb, Discovering Technology Communication, Harcourt-Brace Publishing Co.

National Geographic

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will describe developments in communication methods.
*Objective 2: The student will identify the major types of printing techniques.
Objective 3: The student will cite the uses of printing procedures used in consumer and industrial products.
*Objective 4: The student will list four careers in the area of graphic communication.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Described the development of graphic communication methods.
____*2. Identified the major types of printing techniques used in graphic communication.
_____3. Cited the uses of printing procedures in consumer and industrial products.
____*4. Listed careers in graphic communication.

* Indicates core/essential objectives

Course: Technology Education III: Communication Technology Cluster (7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 7: Photography

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Identify the basic parts of a camera.
2. Describe the function of the aperture and shutter.
*3. Identify the basic types of cameras.
*4. List and describe the differences between the four types of camera lenses.
*5. Load film and shoot pictures with 35mm and instamatic cameras.

* Indicates core/essential objectives

Suggested Instructional Practices:

Demonstrations, viewing films, and video tapes

Activities:

1. Practice loading camera with exposed film.
2. Simulate or perform film processing.
3. Pin-hole camera activity.
4. Video production activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Jones and Robb, Discovering Technology Communications, Harcourt-Brace Jovanovich, Publishers.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will identify from a chart or picture the basic parts of a camera.
Objective 2: The student will write a paragraph describing the function of the camera aperture and shutter.
*Objective 3: The student will identify the four types of cameras using cameras or pictures.
*Objective 4: The student will list and describe the differences between the four camera lenses using models or pictures.

*Objective 5: The student will load film and make pictures with 35mm and instamatic cameras.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Identified the basic parts of a camera.
____2. Described the function of the aperture and shutter.
____*3. Identified the basic types of cameras.
____*4. Listed and described the differences between the four types of camera lenses.
____*5. Loaded film and shot pictures with 35mm and instamatic cameras.

* Indicates core/essential objectives

Course: Technology Education III: Communication Technology Cluster
(8th, 9th Grades, 3 weeks of instruction)

Unit 8: Career and Leadership Opportunities

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Research a career.
*2. Conduct a career interview.
*3. Complete a job application form.
*4. Interview for a job.
*5. Identify job-keeping skills from a list.
6. Write a technical report.
7. Conduct a business meeting using parliamentary procedures.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Audio-visual materials
Handout sheets
Class demonstrations

Activities:

1. Interview a worker in the occupation of student's choice.
2. Role playing interviews. Practice with other students. Prepare an audio/video tape for class.

Suggested Resources:

Primary: Research and Curriculum Unit, "Basic Vocational Education," 1987, Drawer DX, Mississippi State, MS 39762

Secondary: Occupational Outlook Handbook

Seymour, Ritz, and Cloghessy, Exploring Communications, Goodheart-Wilcox Co., Inc.

AIASA Competitive Events Guide

Teacher handout on the Competitive Events' guidelines with discussion. (AIASA Guidelines)

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will select one career and research the career using the Occupational Outlook Handbook as a guide.

*Objective 2: The student will conduct a career interview either in person or by phone using a teacher constructed checklist.

*Objective 3: The student will accurately complete a job application form.

*Objective 4: The student will successfully complete the job interview process.

*Objective 5: The student will match 75% of the job-keeping skills from a list.

Objective 6: The student will write a two-paragraph technical report using the Competitive Events Guide.

Objective 7: The student will conduct a business meeting using parliamentary procedures.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Researched a career.
____*2. Conducted a career interview.
____*3. Completed a job application form.
____*4. Interviewed for a job.
____*5. Identified job-keeping skills from a list.
____6. Wrote a technical report.
____7. Conducted a business meeting using parliamentary procedure.

* Indicates core/essential objectives

Course: Technology Education III: Transportation (Energy and Power) Cluster (7th, and 8th Grades, 1 1/2 weeks of instruction)

Unit 1: Introduction to Energy and Power Systems

Objective(s): Upon completion of this unit, the student should be able to do the following:

1. Define a fluid system.
*2. Define an electrical system.
*3. Define a mechanical system.
*4. Define an electronic system.
*5. List at least five sources of energy.
*6. List five general safety rules and practices.
7. List five ways a computer can be used in transportation technology.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations
Hands-on activities
Field trips
Job sheets
Test - pre-post

Activities:

1. Perform an activity using a laser to demonstrate various types of energy systems.
2. Distinguish between power and energy by demonstrating how energy and power are using research and experimentation techniques.
3. Write a short essay on the different forms of energy and discuss the advantages and disadvantages of each.
4. Exhibit safe working habits by demonstrating how to start and stop a small gas engine such as a Briggs & Stratton type.
5. Disassemble a mechanical device, study its principles of operation, and re-assemble it.
6. Demonstrate how electronic systems on small gas engines work.
7. List five sources of energy and present them illustrated on a poster.
8. Draw a poster which explains safety procedures to follow with selected power and energy systems.
9. Observe and listen to an Air Traffic Controller and write a report.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: General Industry Education and Technology, 7th Ed., Groveman and Fierer, McGraw-Hill, Publishers.

Resource Person

Related Transparencies

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will correctly define a fluid system.
*Objective 2: The student will correctly define an electrical system.
*Objective 3: The student will correctly define a mechanical system.
*Objective 4: The student will correctly define an electronic system.
*Objective 5: The student will list at least five of the sources of energy.
*Objective 6: The student will list five general safety rules or practices.
Objective 7: The student will list five ways a computer can be used in transportation technology.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____1. Defined a fluid system.
____*2. Defined an electrical system.
____*3. Defined a mechanical system.
____*4. Defined an electronic system.
____*5. Listed at least five sources of energy.
____*6. Listed five general safety rules and practices.
____7. Listed five ways a computer can be used in transportation technology.

* Indicates core/essential objectives

Course: Technology Education III: Transportation (Energy and Power) Cluster (7th, 8th Grades, 1 1/2 weeks of instruction)

Unit 2: Energy and Power Systems

Objective(s): Upon completion of this unit, the student should be able to do the following:

1. Describe the components of a fluid system and list five uses of a fluid system.
*2. Describe the components of a mechanical system and list five uses of a mechanical system.
*3. Describe the components of an electrical system and list five uses of an electrical system.
4. Describe the components of an electronic system and list five uses of an electronic system.
*5. Describe the components of a transportation system.
6. Define laser energy and list five uses of laser energy.
*7. Define nuclear energy and list five uses of nuclear energy.
*8. Define five natural energy sources and list five uses of natural energy sources.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Demonstrations
Hands-on activities
Test - pre-post

Activities:

1. Construct a small manually operated fluid power system.
2. Assemble and disassemble a small simple gas engine.
3. Draw and read a schematic diagram of an electric circuit.
4. Construct a small electric motor.
5. Visit a nearby electric power generating plant and study its operation.
6. Design a project which has moving parts that are powered by a fluid system.
7. Demonstrate the use of pneumatics to move parts.
8. Laser activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: General Industry Education and Technology, 7th Ed., Groveman and Fierer, McGraw-Hill, Publishers.

Resource person

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will describe the components of a fluid system and list five uses of a fluid system.

*Objective 2: The student will describe the components of a mechanical system and list five uses of a mechanical system.

*Objective 3: The student will describe the components of an electrical system and list five uses of an electrical system.

Objective 4: The student will describe the components of an electronic system and list five uses of an electronic system.

*Objective 5: The student will describe the components of the transportation system.

Objective 6: The student will correctly define laser energy and list five uses of laser energy.

*Objective 7: The student will correctly define nuclear energy and list five uses of nuclear energy.

*Objective 8: The student will correctly define five natural energy sources and list five uses of natural energy sources.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____1. Described the components of a fluid system and listed five uses of a fluid system.

____*2. Described the components of a mechanical system and listed five uses of a mechanical system.

____*3. Described the components of an electrical system and listed five uses of an electrical system.

____4. Described the components of an electronic system and listed five uses of an electronic system.

____*5. Described the components of a transportation system.

____6. Defined laser energy and listed five uses of laser energy.

____*7. Defined nuclear energy and listed five uses of nuclear energy.

____*8. Defined five natural energy sources and listed five uses of natural energy sources.

* Indicates core/essential objectives

Course: Technology Education III: Transportation (Energy and Power) Cluster (8th, 9th Grades, 3 weeks of instruction)

Unit 3: Engines

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. Describe the difference between internal and external engines.
*2. List five types of engines used today.
3. List five different uses of each type of engine.
4. List ten different tools used in the assembly and disassembly of engines.
*5. List six major parts of the two-cycle engine.
*6. List six major parts of the four-cycle engine.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Test - pre-post
Objective sheets
Reteach

Activities:

1. Prepare a chart on how one of the following combustion engines works: (a) automobile, (b) diesel, (c) jet engine, (d) rocket engine, (e) gas turbine engine, and (f) rotating combustion engine.
2. When presented with an illustration (flash cards) or physical part of (a) air cleaner, (b) head, (c) spark plug, (d) fly wheel, (e) valves, (f) cam shaft, (g) piston, (h) cylinder, (i) fuel tank, (j) fuel pump, (k) block, (l) carburetor, (m) oil pump, (n) crank shaft, (o) connecting rod, and (p) piston rings, correctly identify them and explain their operation and function.
3. Demonstrate the principle of action and re-action using a balloon, a length of fine wire or fishing line, masking tape, and a plastic straw. Blow up the balloon and place a clamping device (clothespin) over its end. Using masking tape, attach the straw evenly across the top of the balloon. Thread the wire/line through the straw and connect it opposite ends of a room. Then, release the clamp. Explain the balloon's actions relative to a jet engine's operations.
4. Construct a Metric 500 model.

5. Break down a two or four cycle engine; name and explain the function of each part.
6. Close the adjusting screw, shutting off the gas coming into the carburetor. Explain what happened to the engine and why it happened. Now, open the adjusting screw. Explain what happens and why it happens.
7. Model Rocketry Activity.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: Purvis, Jud, "All About Small Gas Engines, How to Fix All Kinds of 2-cycle and 4-cycle Engines," 1960, The Goodheart-Wilcox Company, Inc.

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will describe the difference between internal and external engines.
*Objective 2: The student will list five types of engines used today.
Objective 3: The student will list five different uses of each type of engine.
Objective 4: The student will list ten different tools used in the assembly and disassembly of engines.
*Objective 5: The student will list six major parts of the two-cycle engine.
*Objective 6: The student will list six major parts of the four-cycle engine.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Described the difference between internal and external engines.
____*2. Listed five types of engines used today.
____3. Listed five different uses of each type of engine.
____4. Listed ten different tools used in the assembly and disassembly of engines.
____*5. Listed six major parts of the two-cycle engine.
____*6. Listed six major parts of the four-cycle engine.

* Indicates core/essential objectives

Course: Technology Education III: Transportation (Energy and Power) Cluster (7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 4: Impacts of Energy/Power/Transportation

Objective(s): Upon completion of this unit, the student should be able to do the following:

*1. List five steps in the conservation of expendable natural resources.
*2. Define pollution.
*3. List five harmful effects of pollution.
4. List five sources of pollution.
5. Explain five social concerns relative to energy, power, and transportation.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Test - pre-post
Hands-on activities
Objective sheets
Reteach/Retest

Activities:

1. Construct a poster describing different forms of pollution.
2. Write a report to accompany the poster which further explains the various forms pollution takes.
3. Identify local sources of pollution.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: A-V Materials

Resource person

Evaluation and Suggested Minimum Performance Standards:

*Objective 1: The student will list five steps in the conservation of expendable natural resources.
*Objective 2: The student will define pollution.

*Objective 3: The student will list five harmful effects of pollution.
Objective 4: The student will list five sources of pollution.
Objective 5: The student will explain five social concerns relative to energy, power, and transportation.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____*1. Listed five steps in conservation of expendable natural resources.
____*2. Defined pollution.
____*3. Listed five harmful effects of pollution.
____4. Listed five sources of pollution.
____5. Explained five social concerns relative to energy, power, and transportation.

* Indicates core/essential objectives

Course: Technology Education III: Transportation (Energy and Power) Cluster (7th, 8th, 9th Grades, 1 1/2 weeks of instruction)

Unit 5: Career and Leadership Opportunities

Objective(s): Upon completion of this unit, the student should be able to do the following:

1. Describe careers that are available in power and energy industries.
*2. Define free enterprise.
3. Define entrepreneurship.
4. Define professional careers.
*5. Define skilled labor.
*6. Define semi-skilled labor.
*7. Define unskilled labor.

* Indicates core/essential objectives

Suggested Instructional Practices:

Lecture and discussions
Test - pre-post
Reteach/Retest

Activities:

1. View filmstrips in which people describe their jobs.
2. Complete job applications.
3. Participate in a "mock" job interview conducted by a local employer.
4. Role playing in employer/employee situations. This should include deciding why to fire or hire situations.
5. Boat Hull Design.

Suggested Resources:

Primary: Mid-America Vocational Curriculum Consortium, "Exploring Technology Education," 1987, 1500 West Seventh Avenue, Stillwater, OK 74074-4364

Secondary: D. McCrory, K. Todd, R. Todd, "Understanding and Using Technology," 1985, Davis Publications, Inc. Worchester, MA.

Evaluation and Suggested Minimum Performance Standards:

Objective 1: The student will list eight careers in both power and energy industries.
*Objective 2: The student will define free enterprise.
Objective 3: The student will define entrepreneurship.
Objective 4: The student will define professional careers.
*Objective 5: The student will define skilled labor.
*Objective 6: The student will define semi-skilled labor.
*Objective 7: The student will define unskilled labor.

* Indicates core/essential objectives

Performance Record: Place a check by each objective the student achieved:

____1. Described careers that are available in both power and energy industries.
____*2. Defined free enterprise.
____3. Defined entrepreneurship.
____4. Defined professional careers.
____*5. Defined skilled labor.
____*6. Defined semi-skilled labor.
____*7. Defined unskilled labor.

* Indicates core/essential objectives